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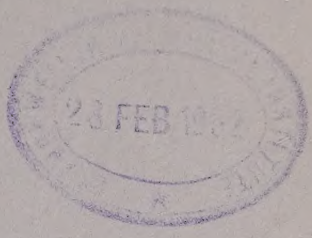

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THE

VETERINARY BULLETIN

Vol. 22.] February, 1952 [No. 2.

DISEASES CAUSED BY BACTERIA AND FUNGI

RAMSAY, A. M. & VAHRMAN, J. (1951.) **The treatment of generalised staphylococcal infections.**—*Lancet.* **260.** 425-428. **296**

Studies in a puerperal sepsis unit on generalized staphylococcal infections are described, in which the use of massive dosage of penicillin (500,000 units every three hours) proved successful in arresting embolic spread and, provided administration of the antibiotic was sufficiently prolonged, in sterilizing pyaemic foci. Massive dosage is recommended in cases of staphylococcal septicaemia to secure adequate penetration of the penicillin into pyaemic abscesses, and to counteract the development of penicillin-resistant strains. Aureomycin was of value in refractory cases not responding to penicillin therapy within 48 hours.

—CLIVE BRIGGS.

RAVAIOLI, L. (1947.) Contributo allo studio della botriococcosi degli equini. Esperimenti di trasmissione nel cane. [**Botryomycosis** (*Staphylococcus*) **infection in horses. Study of lesions produced artificially in dogs.**]—*Nuova Vet.* **23.** 201-206. **297**

A general note on botryomycosis in horses, with a brief account of the lesions that developed in dogs from intratesticular inoculation with cultures of staphylococci isolated from a lesion in a horse.—B. BALDELLI.

STABLEFORTH, A. W. (1949.) **Bovine mastitis.**—*F.A.O. Agric. Studies.* No. 10. pp. 115-148 **298**

A general account of bovine mastitis.

—CLIVE BRIGGS.

KAKAVAS, J. C., ROBERTS, H. D. B., DE COURCY, S. J., JR. & EWING, D. L. (1951.) **Chemotherapy of bovine mastitis with furacin and penicillin mixture.**—*J. Amer. vet. med. Ass.* **119.** 203-207. [Authors' summary slightly modified.] **299**

Furacin [5-nitro-2-furaldehyde semicarbazone]-penicillin mixture is an effective chemotherapeutic agent in the treatment of chronic and acute forms of bovine mastitis. It is non-irritating to the udder tissue and does not interfere with the normal milk production.

Furacin possesses bacteriostatic and bactericidal properties against *Streptococcus agalactiae* and other streptococci, pathogenic staphylococci, *Bact.coli,* and *Pseudomonas pyocyanea.* Its wide range of activity against gram-positive and gram-negative bacteria makes it a valuable adjunct to mastitis chemotherapeutic agents.

PRESTON SMITH, H. (1950.) Enfermedades del alpaca. [**Septicaemia in alpaca.**]—*Rev. Inst. Nac. Biol. anim., Peru.* **1.** 10-12. **300**

The author recorded an outbreak of septicaemia in the alpaca, associated with *Str. pyogenes animalis,* pasteurella organisms *Bact. coli,* and in some cases, with *Cl. welchii.*

—I. W. JENNINGS.

FONTANELLI, E. (1951.) L'aborto da Vibrio foetus nei bovini. [*Vibrio fetus* **abortion in cows.**]—*Zooprofilassi.* **6.** 248-252. **301**

This is a general description of the features of vibrionic abortion in cattle. No new knowledge.—I. W. JENNINGS.

BOLEY, L. E., WOODS, G. T., HATCH, R. D. & GRAHAM, R. (1951.) **Studies on porcine enteritis. II. Experimental therapy with sulfathalidine, sulfamethazine, sodium arsanilate, and bacitracin in a natural outbreak of swine dysentery.**—*Cornell Vet.* **41.** 231-235. [Authors' summary slightly modified.] **302**

An outbreak of swine dysentery or a clinically indistinguishable disease occurred in pigs in the university herd. *Vibrio coli* was isolated

NOTE.—*The* V.B. *references given in square brackets now refer to abstract numbers and not to page numbers.*

from three of the 16 affected animals and *Salmonella* types from two. These animals failed to respond to sulphonamide therapy.

The administration of sulphathalidine at a level of 0·25% in the ration resulted in 40% recovery, and sulphamethazine at a level of 0·2% in 57%. Recovery in untreated controls was 44%.

Treatment with sodium arsanilate (2·1 grains of arsenic per gal. of drinking water), resulted in 83% survival. The surviving animals continued to show symptoms of unthriftiness, though dysentery symptoms completely subsided.

Oral administration of 100,000 units of bacitracin for six days resulted in 96% recovery, and 50,000 units in 80% recovery, as contrasted with 44% in the untreated controls. The recovered animals appeared thrifty.

GORET, P., COLLET, P., JOUBERT, L. & COUROUBLE, G. (1948.) Charbon bactéridien chez le canard. **[Anthrax in ducks.]**—*Bull. Soc. vét. Lyon.* **50.** 42. **303**

A cow which died of anthrax was examined P.M. on the beaten-earth floor of its stall. Two ducks on the same farm died from anthrax within four and six days, respectively. It is suggested that the ducks became infected by feeding on the floor of the stall. This is stated to be the first incidence in ducks in France and the third infection of ducks to be reported in the literature. The authors suggest that web-footed birds may have less resistance to anthrax than other birds.—W. TATHAM THOMPSON.

DE BOER, E. & DJAENOEDIN, R. (1950.) Miltvuur bij de mens. **[Bacillus anthracis infection in man in Indonesia.]**—*Hemera Zoa.* **57.** 147-153. [English and French summaries. Abst. from English summary.] **304**

During 1932-49 anthrax occurred in 74 persons (43 skin lesions, 21 internal; 10 not stated). —W. R. BETT.

GOLEM, S. B. (1945). Şarbon tedavisinde Penicillin. **[Penicillin treatment of anthrax.]** —*Türk Ijiyen ve tecrübî Biyoloji Dergisi.* **5** pp. 77-102. [French summary.] **305**

G. described six detailed tests of treatment of anthrax in g. pigs and rabbits with penicillin sodium administered subcutaneously in saline or lanolin. (1) Five out of five g. pigs survived when given 300 units in saline every three hours for 72 hours beginning 20 hours after infection. (2) Three out of three rabbits given 20,000 units in lanolin and inoculated 30 min. later with 2 m.l.d. survived. (3) Three rabbits given 1 m.l.d. developed symptoms, and were given 1,500 units in saline and 1 hour later 20,000 units in lanolin. One survived and two died. (4) In infected rabbits treated with 4,000 units after 24 hours two out of four died; treated with 2,000 units after 24 and 48 hours three out of four died; 2,000 units after 24, 48, 72 hours three of four died. (5) Large doses of *Bacillus* anthracis were given to g. pigs. 4,000 units penicillin in lanolin were administered for one day, two days, three days. Death was delayed in treated animals. (6) Smaller doses were given to g. pigs, 2,000 and 4,000 units of penicillin being used in treatment. In animals given 4,000 units 12 hours after infection, daily for three days, one out of five died.

In vitro, of four strains of *B. anthracis* one was inhibited by 0·015 unit, two by 0·016 unit and the fourth by 0·02 unit of penicillin per ml. broth.—H. ANTEPLIOGLU.

WRIGHT, G. G., HEDBERG, M. A. & FEINBERG, R. J. (1951.) **Studies on immunity in anthrax. II.** ***In vitro*** **elaboration of protective antigen by non-proteolytic mutants of** *Bacillus anthracis.*—*J. exp. Med.* **93.** 523-527. [Authors' summary copied *verbatim.*] **306**

Non-proteolytic mutants were isolated from the Vollum strain of *B. anthracis* following ultraviolet treatment. The mutants were virulent for rabbits and mice and their non-proteolytic character was stable in culture and on serial passage in rabbits. The mutants produced protective antigen under suitable conditions of cultivation *in vitro,* and allowed longer incubation of the cultures without destruction of the protective antigen than did the parent strain. The meaning of the results is discussed.

COLLET, P., DAVID, G., GORET, P., JOUBERT & TISSEUR. (1950.) Tuberculose scrotale chez un boeuf castré à la pince. **[TB. of the scrotum in a steer castrated with forceps.]**—*Bull. Soc. Sci. vét. Lyon.* **52.** 8-10. **307**

A note on a TB. lesion that developed in the scrotum of a bull that had been castrated with a Burdizzo instrument.—G. V. LAUGIER.

FELDMAN, W. H. (1947.) **Animal tuberculosis and its relationship to the disease in man.**—*Ann. N.Y. Acad. Sci.* **48.** 469-505. **308**

This extensive review is one of a series of articles on the relation of animal diseases to human welfare which occupies the whole number of the journal. TB. in each species of domestic animal is discussed, with special reference to the transmission of the disease to man. The controversial question of avian type infection in man is reviewed critically and some recent reports are considered in detail, includ-

ing two cases from F.'s own laboratory. Although the possibility of human infections with tubercle bacilli having many of the characters of avian type tubercle bacilli must be recognized it is important that such organisms should be distinguished by proper pathogenicity test from saprophytic acid-fast bacilli and from atypical strains of mammalian tubercle bacilli.
—E. G. WHITE.

McKAY, W. M. (1951.) **A discussion of the high incidence of tuberculosis of bovine-type infection in man in Banffshire.**—*Vet. Rec.* **63.** 383-389. 309

Tables and figures are quoted to show the high incidence of TB. in human beings and its relation to infection of cattle in Banffshire. Milk consumption is high, and ignorance and lethargy contribute much towards human infection. Measures calculated to lower its incidence are outlined.—G. V. LAUGIER.

MAITLAND, M. L. C. (1950.) **The rapid detection of *Mycobacterium tuberculosis* by microscopic examination of milk from individual cows and from groups of ten cows.**—*J. Hyg., Camb.* **48.** 397-401. 310

During 1937-39 M. continued her study of the short-time slow-speed centrifugation method for tubercle bacilli, previously described [*V.B.* **7.** p. 633] which had been found to be almost as sensitive as g. pig inoculation when used for quarter samples. Results with mixed quarter samples from individual cows were almost as sensitive and those with mixed milk from groups of ten cows were useful for the rapid detection of infected animals.—E. G. WHITE.

WERNER, G. H. (1951.) La cytologie des bacilles tuberculeux, étudiée en relation avec leurs caractères de virulence. **[The relationship between cytological structure and virulence of *Mycobact. tuberculosis*.]**—*Pr. méd.* **59.** 1043-1044. 311

Electron-microscopic studies are reported of seven strains of human and bovine types of tubercle bacilli. There was a significant difference in surface between virulent and avirulent bacilli.—W. R. BETT.

BRIEGER, E. M., MILES, J. A. R., COSSLETT, V. E. & HORNE, R. W. (1951.) **Nature and infectivity of granular forms of the bovine tubercle bacillus.**—*Nature, Lond.* **168.** 96-98. 312

Bacilli-free extracts, containing 'granular particles' demonstrable under the electron microscope, from tuberculous rabbit tissues produced glandular abscesses containing many acid-fast bacilli when injected into g. pigs. The authors do not regard the granules as simple bacterial variants.—CLIVE BRIGGS.

NISHIOKA, K. (1950.) **Studies on the specific changes of host cells in the course of infection. I. Report. Experiments of the tuberculin hypersensitivity.**—*Jap. J. exp. Med.* **20.** 665-672. [In English.] 313

By using an extract of tuberculous g. pig spleen and lymph nodes extracted by alternate freezing and thawing, passive transfer of tuberculous type sensitivity was achieved. Washed cells from tuberculous lymph nodes and spleen added to Old Tuberculin markedly inhibited the skin reaction induced by the tuberculin.
—D. LUKE.

MILZER, A., LEVINE, E. R. & LEWIS, M. B. (1951.) **Evaluation of the mouse test for the laboratory diagnosis of tuberculosis.**—*J. Lab. clin. Med.* **37.** 803-806. [Authors' summary slightly modified.] 314

Comparative studies were carried out on routine specimens from patients for the diagnosis of TB. by the direct smear and simultaneous inoculation of Petragnani's media, g. pigs, and line 1 dba mice. The various specimens inoculated into mice were previously mixed with gastric mucin and injected both subcutaneously and intraperitoneally. The mice were fed a corn-meal diet starting at the time of inoculation and were killed 10–20 days later. The results obtained indicate that the mouse is inferior to the g. pig and culture media and its use cannot be recommended as a primary diagnostic procedure for the routine laboratory diagnosis of TB.

SUTER, W. E. & DUBOS, R. J. (1951.) **Variability of BCG strains (bacillus Calmette-Guérin).**—*J. exp. Med.* **93.** 559-572. [Authors' summary copied *verbatim*.] 315

Three different cultures of BCG propagated for over 2 years in a liquid medium containing Tween 80 and albumin were found to differ in several of their intrinsic properties. Cultures of the three strains were found to consist of morphologically heterogeneous populations—each culture being made up of three main colonial types—spreading, intermediate, and non-spreading. The percentage distribution of colonial types was characteristic for each culture and remained constant during cultivation in liquid media. Injection of the various cultures into mice and guinea pigs resulted in a self-limited disease. The distribution, extent, and duration of the lesions were also characteristic for each culture. Both the spreading and non-spreading substrains derived from the vari-

ous cultures exhibited the degree of attenuation of virulence characteristic of the parent strain.

CAUCHY, L., GORET, P., MÉRIEUX, C. & VERGE, J. (1951.) Le traitement de l'entérite chronique hypertrophiante des bovidés par la streptomycine. [**Treatment of Johne's disease in cattle with streptomycin.**]—*Bull. Acad. vét. Fr.* **24.** 93-95. 316

Treatment of two cows with Johne's disease with dihydrostreptomycin and streptomycin was ineffective.—G. V. LAUGIER.

VERGE, J., GORET, P. & CAUCHY, L. (1951.) Le traitement de l'entérite chronique hypertrophiante des bovidés par les sulfones. [**Treatment of Johne's disease in cattle with sulphones.**]—*Bull. Acad. vét. Fr.* **24.** 97-99. 317

Treatment of two cows with Johne's disease with sulphetrone and 4,4'-diaminodiphenyl sulphone was ineffective.—G. V. LAUGIER.

WHEATE, H. W. (1951.) **Preliminary report on sulphetrone therapy in lepromatous children.**—*E. Afr. med. J.* **28.** 272-277. [Abst. from author's summary.] 318

From the results of trials on 25 children it appears unlikely that a cure of advanced nodular leprosy in children can be effected by sulphetrone in less than five years.

ODIER, M. (1949.) Contribution à l'étude de quelques mycobactéries: métabolites et antibiotiques. [**Action of metabolites and antibiotics on some mycobacteria.**]—*Schweiz. Z. Path Bakt.* **12.** 380-399. [In French. English, German and Italian summaries. Abst. from English summary.] 319

Phthiocol and 2-methyl-naphthoquinone were not indispensable for the growth of the various mycobacteria tested but, in appropriate doses, could enhance their growth. The bacteriostatic action of benzoquinones is far less than that of naphthoquinones. The bacteriostatic properties of 2-oxy-3-chloro-naphthoquinone are not counteracted by phthiocol and various organic substances or only to a minimal degree. In the presence of cysteine, however, which retards the growth of *Mycobacterium johnei*, bacteriostasis by 2-oxy-3-chloro-naphthoquinone is enhanced.

HARAKAWA, T. & MORITA, S. (1949.) **Observations on *Corynebacterium equi* isolated from abscesses occurring in the lung of foals.**—*Jap. J. vet. Sci.* **11.** 63-74. [In Japanese: Abst. from English summary.] 320

The clinical, P.M. and bacteriological findings in *C. equi* pneumonia in foals are described, and also the characters of the causal organism. The disease could be reproduced experimentally in foals by oral or intranasal inoculation of the organism.—CLIVE BRIGGS.

OVEJERO DEL AGUA, S. (1951.) Corynebacterium renale (Migula) (Pyélonéphrite bovine). [**Pathogenicity for laboratory animals and sensitivity to antibiotics of *C. renale*.**]—*Bull. Off. internat. Epiz.* **35.** 332-336. 321

The author described the morphological and biological properties of *C. renale*, as well as its pathogenicity in laboratory animals and its sensitivity to antibiotics *in vitro*.

—G. P. MARSHALL.

GIOLITTI, G. (1951.) Ricerche sperimentali sull'azione di alcuni antibiotici su "Malleomyces mallei" in vitro e in vivo. [**Action of antibiotics on *Pfeifferella mallei*.**]—*Arch. Vet. Ital.* **2.** 15-28. [English, French, German and Spanish summaries.] 322

Growth of *Pfeifferella mallei in vitro* was prevented by streptomycin or chloromycetin at 2·5 g. per ml. of substrate, and by aureomycin at 1 g. per ml. These antibiotics were however ineffective when given to infected g. pigs, at 50 mg. pr kg. live weight daily administered in two doses at 12-hour intervals in the case of the first two, and at 25 and 50 mg. per kg. given four times daily every six hours in the case of the latter.—K. J. SINCLAIR.

BRILL, J. & SZYNKIEWICZ, Z. (1950.) Podłoże wybiorcze do hodowli włoskowców różycy świń. [**Cultivation of *Erysipelothrix rhusiopathiae*.**]—*Med. weteryn.* **6.** 516-517. 323

A general note. Much of the material received for a bacteriological diagnosis is contaminated. The authors speak of using a selective method on conventional lines for the isolation of the organism.—J. R. MITCHELL.

SABA, B. & PAJALUNGA, G. (1951.) Ricerche sulla dissociazione di "Erysipelothrix rhusiopathiae". [**Dissociation of *Erysipelothrix rhusiopathiae*.**]—*Arch. Vet. Ital.* **2.** 1-14. [English, French, German and Spanish summaries.] 324

An "R" variant of a strain of *E. rhusiopathiae* was produced from an "S" variant after 11 passages through pigeons. The two strains differed markedly in their morphological properties, virulence and behaviour towards trypaflavine, but only very little in their cultural and biochemical characteristics. The higher antigenic potency of the "R" variant was tentatively explained by the authors as

being due to the acquisition of "Vi" antigen on passage.—G. P. MARSHALL.

VISWANATHAN, G. R. & AYYAR, V. V. (1950.) **Circling disease of sheep in the Madras State —etiology established.**—*Indian vet. J.* **26.** 395-402. 325

The cause of a sporadic and fatal condition of sheep—circling disease—in Madras State has been found to be an *Erysipelothrix* organism. Data of 32 outbreaks in 13 years were presented.—K. C. SINHA.

PERDRIX, J. & COSSON, Y. (1951.) Broncho-pneumonie du porc due au bacille pyocyanique. [**Broncho-pneumonia in pigs caused by** *Pseudomonas pyocyanea.*]—*Rec. Méd. vét.* **127.** 489-491. 326

Two cases of infection with this organism are described. A 100 lb. pig died following wounds inflicted by other animals in the piggery. The musculature near the wound had a blue colour and an unpleasant odour, although there had been no putrefactive changes after death. No bacteriological examination was made. A second animal suddenly developed a cough and its weight fell from 187 lb. to 110 lb. within ten days. Autopsy showed a greenish coloration of the liver and peritoneum, fibrinous pleurisy and widely disseminated acute broncho-pneumonia with lesions which ranged in colour from grey or yellow to bluish green and were caseous or purulent. *Ps. pyocyanea* was isolated from the lesions and produced in culture the aromatic but disagreeable odour of the natural lesions.—E. G. WHITE.

MITSCHERLICH, E. (1950.) Eine Präzipitatvakzine gegen Geflügelcholera. [**A vaccine against fowl cholera.**]—*Mh. prakt. Tierheilk.* 2. 288-302. [Abst. from author's summary.] 327

Two inoculations of an alum-precipitated dead vaccine against fowl cholera conferred three months' protection on pigeons against 100 M.L.D. of culture.—G. P. MARSHALL.

PHILIPPS, V. L. A. & FERNANDEZ, C. L. (1950.) Abortos a Escherichia coli en vacunos. [*Bact. coli*, **a cause of abortion in cattle.**]—*Rev. Inst. Nac. Biol. anim., Peru.* **1.** 13-21. 328

The authors consider that strains of *Bact. coli* which they isolated from aborted foetuses, from uterine discharge and from semen were responsible for abortion in cattle.

—I. W. JENNINGS.

VISHNEVSKI, P. P. (1949.) [**Role of colostrum in prevention of septicaemia in new-born calves.**]—*Veterinariya, Moscow*, **26.** No. 6 pp. 11-14. 329

A note on the importance of ensuring that new-born calves receive colostrum.—F.A.A.

MOULE, G. R. & YOUNG, R. B. (1951.) **Field observations on salmonellosis in transported rams.**—*Aust. vet. J.* **27.** 149-153. [Authors' summary modified.] 330

Observations on losses amongst 15 drafts of rams, imported into Queensland during 1949 and 1950, are reported. Various salmonella organisms were recovered from rams which died amongst seven of the drafts. The histories of the affected sheep, the symptoms and P.M. findings are recorded, and the factors likely to predispose animals to the establishment of salmonella infections are briefly discussed.

MITROVIĆ, M. (1949.) Sull'aborto infettivo degli ovini da *Salmonella abortus-ovis*. [**Infectious abortion in sheep caused by** *Salmonella abortus-ovis*.—*Clin. vet. Milano.* **72.** 197-203. 331

M. discussed briefly the causes of abortion in sheep and reported an outbreak caused by *S. abortus-ovis*. He discussed the value of serological tests for diagnosis.—L. BADIALI.

HUISMAN, W. (1951.) Over het voorkomen van tot het geslacht "Salmonella" behorende micro-organismen bij gezonde varkens. [*Salmonella* **organisms in healthy pigs.**]—*Tijdschr. Diergeneesk.* **76.** 470-479. [English, French and German summaries.] 332

This is an abst. of the author's thesis, Utrecht 1950 [*V.B.* **21:** 3163].

—C. A. VAN DORSSEN.

KARLSHØJ, K. & MARTHEDAL, H. E. (1949.) Om salmonellainfektioner hos fjerkrae i Denmark, specielt med henblik på infektion med *S. niloese*. [**Salmonella infection in fowls in Denmark with reference to** *S. niloese* **in particular.**]—*Nord. Vet.-Med.* **1.** 233-249. [Abst. from English summary.] 333

Since April 1944 *S. niloese* has been isolated from chicks in a number of cases, and in two cases goslings and ducklings were involved. P.M. examination showed little definite evidence of disease: in some cases there was pneumonia and greyish miliary foci were demonstrable in the liver. The birds affected were mostly from one day to three weeks old and the mortality varied from 10–90%. Lowered resistance had considerable aetiological significance. *S. niloese* was isolated from two of 100 faecal samples from adult fowls, from incubator dust, from egg shells,

from the yolk sac and from three pigs which had eaten dead chicks and egg shells. Thirty serologically positive hens were bacteriologically negative for *S. niloese*.—H. BOYD.

GERNEZ-RIEUX, C., BUTTIAUX, R., KESTELOOT, A. & SUFFRAN, R. (1949.) Intoxications alimentaires par "Salmonella pullorum". **[Food poisoning by** *S. pullorum*.**]**—*Pr. méd.* **57.** 479. 334

Three members of a family of nine were affected with acute gastro-enteritis some 12 hours after a meal which included fried hens' eggs. Symptoms persisted for 48 hours, after which improvement was rapid. *S. pullorum* was isolated as the sole pathogen on culture of faeces from all three cases and the authors infer that it was the cause of the illness. They advise prolonged cooking of eggs which may be infected.—H. PAVER.

MONACI, V. & DE FILIPPIO, V. (1950.) Tossinfezione epidemica di origine alimentare da S. münchen. [*Salmonella muenchen* **food poisoning.**]—*Boll. Ist. sieroter., Milano.* **29.** 377-381. [Abst. from English summary.] 335

The authors describe an epidemic of alimentary origin due to *S. muenchen* (VI. VIII. . . d 1,2) that affected 105 people after eating raw or lightly cooked horse meat (minced meat and fresh sausage). *S. muenchen* was isolated from the faeces of 15 of the patients as well as from the horse meat; agglutinins against *S. muenchen* were found at relatively high titres (1:80 to 1:640) in the serum of 22 patients examined at various times after the beginning of the gastro-intestinal symptoms. *S. muenchen* disappeared from the faeces in about three weeks.

GILMAN, H. L. (1951.) **Use of the ring test in the diagnosis of bovine brucellosis.**—24*th Ann. Rep. N.Y. Sta. Ass. Milk Sanit.* pp.51-61. 336

The test is described. Taking the blood agglutination test as a standard, the value of the ring test in detecting infected herds and individual animals is discussed. Factors causing discrepancies are indicated. G. concludes that the test is of value in detecting infected herds, but that it must be used in conjunction with the blood test.—C. C. BANNATYNE.

D'ALESSANDRO, G. & CELANO, G. (1950.) Il fenomeno paradosso nella sieroagglutinazione brucellare. **[The paradoxical phenomenon in** *Brucella* **agglutination.]**—*Boll. Ist. sieroter., Milano.* **29.** 173-177. [Abst. from English summary.] 337

In studies on the prozone or paradoxical phenomenon, which sometimes occurs in brucella agglutination, the authors demonstrated that in the presence of an excess of specific antibodies, bacterial cells are surrounded by a film of antibody globulins. These globulins isolate and protect the organisms from the agglutinating activity of antibodies.

Evidence of such a film of globulin on the bacterial surface is based on the following findings: *Brucella* which have been kept in contact with *Br. melitensis* serum in "paradoxical" concentration can no longer be agglutinated by a *Br. melitensis* serum at any concentration after they have been washed. The same organisms are agglutinated by a human globulin antiserum (Coombs antiserum).

PICKETT, M. J. & NELSON, E. L. (1950.) *Brucella* **bacteriophage.**—*J. Hyg., Camb.* **48.** 500-503. [Authors' summary copied *verbatim*.] 338

Filtrates prepared from suspensions and broth cultures of *Brucella* variants were examined for the presence of *Brucella* bacteriophage. Smooth *Brucella*, when mixed with decimal dilutions of these filtrates in broth, contained typical bacteriophage plaques when inoculated on solid medium, and gave a heavy turbidity in broth after suitable incubation, but frequently failed to yield visible growth upon plating from these broth cultures to a solid medium. These data were discussed in terms of *Brucella* bacteriophage, and it is concluded that the presence of this virus best accounted for the phenomena observed.

VAN DRIMMELEN, G. C. (1948.) Die Gebruik van Brucella abortus (Stam 19) Enstof in Suid-Afrika. **[Control of bovine brucellosis in S. Africa by Strain 19 vaccine.]**—*J. S. Afr. vet. med. Ass.* **19.** 151-159. [In Afrikaans. English summary.] 339

A general account of experience in South Africa with Strain 19 *Brucella* vaccine.

VAYSSE, J. & PLACIDI, L. (1950.) Note sur la prophylaxie vaccinale et la chimiothérapie des brucelloses animales. **[Immunization and chemotherapy in brucellosis in animals.]**—*Bull. Off. internat. Epiz.* **34.** 260-276. 340

A discussion on vaccination in calves including the use of Strain 19 against brucellosis. Mention was made of various chemotherapeutic agents which had been used without success.

—W. E. ELLIS.

KAMEL, H. (1949.) **Brucellosis in the gazelle.**—*Med. & Lab. Progr. Cairo.* **10.** [No. 12.] 265-275. [Abst. in *List of Scientific Papers*

published in the Middle East. No. 6. p. 52. (1950), modified.] 341

It is the first record of *Brucella abortus bovis* isolated from the gazelle, *Gazella dorcas*. It was isolated in June 1949 from joint swellings (hocks and knees) during an epidemic of *Brucella* infection among the gazelles in the Royal Park at Inshas, Egypt.

MORSE, E. V., KOWALCZYK, T. & BEACH, B. A. (1951.) **The bacteriologic aspects of experimental brucellosis in dogs following oral exposure. I. Effects of feeding aborted fetuses and placentas to adult dogs.**—*Amer. J. vet. Res.* **12.** 219-223. [Abst. from authors' summary.] 342

Dogs were found to harbour virulent brucella in one or more lymph nodes for a period of 151 days following a single meal of aborted foetal and placental material from cows infected with *Brucella abortus* U.S. Department of Agriculture strain 2308. Shortly after feeding, brucella were recovered from the urine on two occasions and once from the faeces. Bacteraemia was shown to exist in only one dog at 48 hours after exposure. Agglutinins did not appear in serum samples from all the infected dogs, but all those which developed titres were found to be infected at autopsy. Agglutinins were demonstrable over a period of 151 days.

Two pregnant bitches appeared to have aborted following the single oral exposure; two others mated after exposure whelped normal, healthy litters at term.

MOSIMANN, W. (1949.) Allergene aus Brucella abortus Bang. [*Brucella abortus* **allergens.**] —*Schweiz. Z. Path. Bakt.* **12.** 362-379. [English, French and Italian summaries. English summary modified.] 343

The following fractions were prepared from *Br. abortus*: an aqueous whole extract, the gluco-lipoid-polypeptide complex (endotoxin), a nucleoprotein fraction and a polysaccharide fraction. Each fraction was examined with respect to its toxicity to mice and dogs, antigenicity and its sensitizing properties. The endotoxin was found to be toxic, the aqueous extract and the nucleoprotein fraction less toxic and the polysaccharide non-toxic. Complete antigenicity was exhibited by the aqueous extract and the endotoxin. The polysaccharide was a hapten. It was especially well suited for the skin allergy test.

WASHKO, F. V. & HUTCHINGS, L. M. (1951.) **Studies on the pathogenicity of *Brucella suis* for cattle. II.**—*Amer. J. vet. Res.* **12.** 165-174. [Authors' summary slightly modified.] 344

Under the conditions of the experiment reported here, it has been demonstrated that *Br. suis* is capable of causing brucellosis in cattle following intramammary exposure. Active infection of pregnant cattle with *Br. suis* did not result in premature expulsion of foetuses. In such cases of active infection resulting from exposure to *Br. suis via* the mammary tissues, acute cases of bovine mastitis developed with elimination of living *Br. suis* in the milk from affected quarters. Such infection resulted in extreme inflammatory reactions in the exposed quarters with concurrent gross alterations of the mammary secretions and acute symptoms in the cases of marked mastitis. Microscopically, the pathological changes were characterized by focal infiltrations of lymphocytic and polymorphonuclear cells both interstitially and into the alveolar sacs along with proliferations of fibroblasts and some desquamation of alveolar epithelial cells. Intramammary exposure of cattle to *Br. suis* resulted in blood serum-agglutination responses indicative of infection. At times, the responses reached a titre of positive at a serum dilution of 1:10,240. P.M. examination of the animals for *Br. suis* resulted in recovery of the organisms from lymph nodes in widely scattered parts of the body.

HUTCHINGS, L. M. & WASHKO, F. V. (1947.) **Brucellosis in swine. VII. Field control experiments.**—*J. Amer. vet. med. Ass.* **110.** 171-174. 345

The authors state that, using the agglutination test on a herd basis, a satisfactory method of control in infected herds is by the segregation from the adult stock of those young pigs which are negative reactors at the time of weaning and that by this means a clean herd may be established within one year.—J. T. DONE.

ELBERG, S., HERZBERG, M., SCHNEIDER, P., SILVERMAN, S. J. & MEYER, K. F. (1951.) **Studies on the immunization of guinea pigs and mice to brucella infection by means of the "native antigen".**—*J. Immunol.* **67.** 1-13. [Authors' summary copied *verbatim.*] 346

The "native antigen" of *Brucella suis* is capable of inducing immunity in guinea pigs and mice to 10-200 minimal infective doses. The degree of immunity conferred on both animal species was, under certain conditions, such that between 75 and 80 per cent of the animals subsequently cleared their tissues of cultivable *Brucella* within one month of infection. No single variable in the administration

of the vaccine was specifically effective in altering the results. Hypotheses are offered to account for this.

The bactericidal action of whole blood of vaccinated guinea pigs has not as yet served as a reliable index of the immune state of the animal. Vaccination with "native antigen" did not confer a state of cutaneous hypersensitivity on the guinea pigs.

JAMIESON, S. & THOMSON, A. (1949.) **Studies in black disease. II. The value of *Cl. oedematiens* toxoid and anaculture together with carbon tetrachloride therapy in the control of the disease.**—*Vet. Rec.* **61.** 399-402. [For part 1, see *V.B.* **21.** 47.] 347

Effective control rests upon the production of an artificial immunity to *Cl. oedematiens* toxins together with the adoption of measures against the liver fluke. Three antigens—a toxoid, an aluminium precipitated toxoid and a formolized whole culture (anaculture)—were prepared. Although response was poor, a preliminary trial indicated that 2–5 ml. doses were effective.

In tests on 18 Caithness farms with anaculture, toxoid and concomitant liver fluke therapy, 4,720 sheep were divided into three approximately equal groups. Toxoid and anaculture (2 ml.) were given to the first two groups respectively and repeated after 14 days. The controls were dosed with carbon tetrachloride alone.

In the toxoid group 1·2% of the sheep succumbed to black disease, 0·3% of the anaculture group and 2·4% of unvaccinated controls. If, however, the 18 farms were arranged in high, medium and low mortality rate groups, then the anaculture was shown to be superior to toxoid (4 : 1).—MALCOLM WOODBINE.

VOGLER, E. (1949.) Zur Frage des Angriffspunktes des Tetanustoxins beim lokalen Tetanus. **[Tetanus toxin and local tetanus.]** —*Schweiz. Z. Path. Bakt.* **12.** 692-716. [English, French and Italian summaries. Abst. from English summary.] 348

Local tetanus is due to a direct action of the toxin on the motor end plates. Two phases of local tetanus can be distinguished, the second phase being conditioned by the first. The cerebrospinal fluid leaving the endo- and perineural spaces flows into the lymphatic system. Spinal cord tissue of animals suffering from tetanus and of normal animals has the same toxin neutralizing capacity when tested in vitro.

THOMAS, C. G., JR., KELEHER, M. F. & MCKEE, A. P. (1951.) **Botulism, a complication of *Clostridium botulinum* wound infection.**—*Arch. Path.* **51.** 623-628. [Abst. from authors' summary.] 349

A case of fatal botulism due to infection of a relatively minor gunshot wound of the thigh of a 13 year old boy is presented. The patient died approximately nine days after the injury.

This case is of unusual interest, since the literature contains no previous reports of cases in which botulism occurred following *Cl. botulinum* infection of a wound. Despite the absence of previous reports, it would seem that botulism from this source might occur more frequently. The organism is ubiquitous in nature, a potential contaminant of every traumatic wound. Furthermore, its growth requirements for initiating an infection appear to be practically identical with those of *Cl. tetani*. Finally, botulism has been produced in experimental animals by the injection of heated spores, and investigators have demonstrated that the botulinus toxin may be absorbed from broken skin and fresh wounds.

BENEDEK, T. (1951.) **Critical survey of the mycological literature of the years 1939 to 1942.**—*Mycopath. Mycol. Applic.* **5.** [No. 4.] 277-399. 350

A continuation of the general review of medical mycology for the period stated, with odd reference to certain infections in animals [see *V.B.* **21.** 3182]. This is not a review of the relevant veterinary literature.

The commentary mostly concerns clinical and epidemiological aspects of the subject, but there is a good deal about cultivation and there are general details concerning the various pathogens.

There is a bibliography, but in certain instances authors are quoted in the text whose publications are not included in the bibliography. There is a very short section headed "Fungus infections in animals", but in it mention is made only of actinomycosis and actinobacillosis.

There is more reference to *Coccidioides immitis* infection of animals than with any of the other fungi referred to in this review.

The headings of the review are: bronchomoniliasis; blastomycosis Gilchrist; torulosis; chromoblastomycosis; coccidioidomycosis; paracoccidioidal granuloma; histoplasmosis; rhinosporidiosis; sporotrichosis; maduromycosis; actinomycosis; experimental biology and immunology; aspergillosis; fungus infections in animals; varia.

ANDERSON, J. B. & JØRGENSEN, K. L. (1949.) Gaerceller (torulaceae) som årsag til mastitis

efter penicillinbehandling. [**Yeast cells (Torulaceae) causing mastitis after penicillin treatment.**]—*Nord. Vet.-Med.* **1.** 958-966. [English summary modified.] 351

Owing to certain complications in the penicillin treatment for chronic streptococcal mastitis, manifest by a decrease in the milk yield, especially in very productive cows, and by changes in the milk from some of the treated quarters, investigation of this problem was carried out on three herds.

It was demonstrated that these affections were due to infection with yeast organisms as a complication of the treatment. Such infection was found in 14 quarters. With the exception of one case, the incidence of the clinical symptoms was limited to a few days after treatment, and the organisms disappeared in about six weeks.

The distilled water used for the penicillin injection was found to be contaminated with the yeast organisms.

THOROLD, P. W. (1951.) **Equine sporotrichosis.**—*J. S. Afr. vet. med. Ass.* **22.** 81-83. [Author's summary copied *verbatim*.] 352

Sporotrichosis is a rare condition in the domesticated animals in South Africa, although, owing to the wide distribution of the infective agent, ample opportunity for infection exists. Treatment with sodium iodide appears to be specific.

KLIGMAN, A. M. & MESCON, H. (1951.) **Improved technic for diagnosing ringworm infections and moniliasis.**—*J. Amer. med. Ass.* **146.** 1563-1565. [Authors' summary copied *verbatim*.] 353

A method is described of staining fungi in skin scrapings with basic fuchsin. The method is superior to the potassium hydroxide technique, since a correct diagnosis can thus be made with much greater accuracy.

HARRIS, A. N. A. & HARDING, W. B. (1950.) **Unusual outbreak of mycotic dermatitis in lambs.**—*Yearb. Inst. Insp. Stk., N.S.W.*, 1950. pp.35-37. 354

Severe lesions occurred in lambs about two months old and affected the skin around the mouth and nose and on the ears and legs. There were many scabs around the eyes and conjunctivitis. Absence of lesions in the fleece suggested that the condition may have been contagious pustular dermatitis, but examination of material revealed mycelial strands and conidia. Of the flock of 30 lambs 24 were affected and six died.—H. McL. GORDON.

THOMPSON, L. (1950.) **Isolation and comparison of actinomyces from human and bovine infections.**—*Proc. Mayo Clin.* **25.** 81-86. 355

Eight strains of actinomycetes collected from human lesions were compared with 11 strains isolated from jaw bones of cattle with lumpy jaw. The strains were cultivated on brain broth containing 0·2% glucose on thioglycollate medium and on a "hormone-agar" medium. Most strains lived from 4–6 weeks at room temperature.

Strains of human origin produced rough cultures and all but one of the strains from cattle produced smooth cultures.

It is stated that since *Actinomyces israeli* produces rough cultures and *Actinomyces bovis* smooth cultures, the recovery of *Actinomyces israeli* from a bovine lesion indicated that infection in cattle may be caused by the agent of the disease in man and that it is likely that some cases of human actinomycosis are caused by *Actinomyces bovis*.—E.G.

DOLMAN, C. E., KERR, D. E., CHANG, H. & SHEARER, A. R. (1951.) **Two cases of ratbite fever due to *Streptobacillus moniliformis*.**—*Canad. J. publ. Hlth.* **42.** 228-241. 356

A report of two cases of *Actinomyces muris-ratti* infection in children aged three years and one year respectively. After two million units of penicillin had been given, no further *Actinomyces muris-ratti* cultures were isolated but a pleuropneumonia-like variant, the L_1 form of Klieneberger, was isolated from the blood stream of both patients. *Spirillum minus* could not be demonstrated. The authors conclude that *Actinomyces muris-ratti* is the true causal agent in rat-bite fever and that *Spirillum minus* plays a negligible role, or may not even be transmissible to man.—R. GWATKIN.

LONGLEY, E. O. (1951.) **Contagious caprine pleuro-pneumonia. A study of the disease in Nigeria.** pp. 27. London: H.M. Stationery Office. Col. Res. Publ. No. 7. 4s. 357

An extensive survey of existing literature on caprine contagious pleuro-pneumonia is followed by a description of experimental studies in Nigeria. The disease is the same as that found in India. Transmission experiments are described. Cultivation of the organism, infection by inoculation of culture material and of material from goats so infected are detailed. The organism responsible was shown to be one of the pleuro-pneumonia group.

[The full protocols of L.'s work on which this report is based have been deposited in the Bureau of Animal Health, Weybridge, Surrey.]
—W. S. MARSHALL.

JOHNSON, D. W. (1950.) **The Australian leptospiroses.**—*Med. J. Aust.* Nov. 11th. 724-731. **358**

Since 1934, when leptospirosis was first diagnosed in Australia, 188 human cases have been recorded and J. records a further 168. The five serological types concerned are *L. icterohaemorrhagiae, L. australis* A and B (sugar cane areas), *L. pomona* and *L. mitis*. The disease is endemic in the coastal region of North Queensland where sugar cane is grown and in farming areas in south-eastern Queensland and north-eastern New South Wales. It is largely an occupational disease, affecting people engaged in sugar-cane farming, dairying and pig farming, butchers and sewer workers and those work-in in cafés, hotels and markets. Preventive measures include rat destruction and prevention of contamination with rat urine, the wearing of rubber boots by rural workers and attention to breaks in the skin.—E. G. WHITE.

HIRSCH, W. (1949.) **[Serologic confirmation of a case of leptospirosis observed in 1942.]**—*Harefuah.* **37.** 136. [In Hebrew. Abst. from English summary, p. 137.] **359**

In a sample of serum taken from the first patient infected with *Leptospira* observed in Palestine on the 44th day of illness, and preserved in the refrigerator for 6½ years, agglutinins against *L. bovis* were found at high titre.

SANDLER, R. (1949.) **[Leptospirosis pomona, the disease of swineherds, in Israel.]**—*Harefuah.* **37.** 165. [In Hebrew. Abst. from English summary, pp. 167-168.] **360**

An acount of five cases of *L. pomona* infection in human beings in Israel, all workers in a piggery. S. stated that these were the first cases of infection by that organism in that country.

KRÄMER, R. & WIELAND, O. (1949.) Ueber Infektionen mit *Leptospira canicola* beim Menschen. **[Canicola fever in man.]**—*Ärztl. Forschung.* **3.** 460-464. **361**

The clinical picture of five cases of *L. canicola* infection in man is described. Definite diagnosis was possible by the agglutination test only. Four of the five patients had had contact with sick dogs, two of which were traced and yielded positive (1:128,000) titres against *L. canicola*. The therapeutic effects of neosalvarsan and of penicillin are discussed.—E.G.

HENRICI, A. T. [M.D. Prof. of Bacteriology, University of Minnesota.] & ORDAL, E. J. [Ph.D. Associate Prof. of Microbiology, University of Washington.] [Revised by.] (1948.) **The biology of bacteria. An introduction to general microbiology.** pp. xiv+ 577. New York: D. C. Heath & Co. London: George G. Harrap & Co. Ltd. 3rd Edit. 30s. **362**

This book is not a textbook of applied bacteriology but an attempt to deal with all aspects of biology of the bacteria. It is intended for the general student or as an introduction to the subject for students who will later specialize in some applied aspect of bacteriology. Chapters on fungi, yeasts, protozoa, spirochaetes, rickettsia and viruses are also included. Agricultural and industrial bacteriology are included, but the medical and veterinary fields receive rather more attention.

As giving an overall view of bacteriology as a science the book has its value, but it cannot take the place of more specialized textbooks.—M.C.

See also absts. **404** (interference phenomenon between swine erysipelas and Teschen disease); **514** (tularaemia and bubonic plague in the U.S.S.R.); **533** (diseases of game); **588** (*Cl. welchii* food poisoning); **614** (bacterial flora of sheepskins); **630** (report, U.S.A.); **631** (book, bacteriology).

DISEASES CAUSED BY PROTOZOAN PARASITES

ROMAN, G. (1945.) Premunición bovina. Contribución al estudio de las enfermedades por hematozoarios en los animales domésticos. **[Premunization of cattle against protozoan infections.]**—*Rev. Med. vet., Bogotá.* **14.** 1-32. **363**

This is a general article on the premunization of cattle in Colombia against the tick-borne diseases, anaplasmosis, piroplasmosis and babesiasis. Experiments in 41 cattle showed that the best time for immunization is between one and two years of age. The infected-blood donors should be of the indigenous breeds—never imported cattle—and should be in first class condition. They should also be free from salmonellosis. Reactions in the premunized animals may be mitigated by the use of specific drugs, which enable them to recover their condition more rapidly than untreated animals.

R. states that economic reasons are responsible for the fact that there is no nation-wide campaign against the ticks. This may be open to doubt, as a conservative estimate of the annual loss to Colombia from tick-borne diseases is roughly one hundred million dollars. However, the epidemiologist would be inclined

to agree that the creation of large numbers of healthy carriers would be the best line of attack under the prevailing conditions.

—I. W. JENNINGS.

SASAKI, N. & NISHI, T. (1950.) **On *Trypanosoma theileri* in cattle in the Tokachi District, Hokkaido.**—*J. Jap. vet. med. Assoc.* **3.** 350-352. 364

When the authors made a survey on cattle piroplasmosis in Hokkaido, 1947, they found a large trypanosome in some blood smears.

This was identified as *T. theileri* by its morphology, minor pathogenic importance and scarcity of distribution.—KOGI SAITO.

VAYSSE, J. & ZOTTNER, G. (1950.) Contribution à l'étude de la chimiothérapie et de la chimioprévention de la dourine par l'antrycide. [**Antrycide in treatment and prophylaxis of dourine.**]—*Bull. Off. internat. Epiz.* **34.** 172-179. 365

Th effects of antrycide on horses infected with *Trypanosoma equiperdum* were studied and compared with the action of older drugs. After subcutaneous injection of antrycide sulphate at a dose rate of 0.005 g. per kg., 18 of 19 infected horses were cured, and protection against subsequent infection was achieved for over four months in all of four cases.

—ERNEST C. FOULKES.

PICK, F. (1950.) L'intervention de l'acide 4-amino-2 hydroxy-benzoïque dans les Trypanosomiases animales expérimentales. [**4-amino-2 hydroxy-benzoic acid in experimental *Trypanosoma* infection.**]—*C.R. Acad. Sci., Paris.* **231.** 82-83. 366

P. discussed the action of 4-amino-2-hydroxy-benzoic acid (*p*-amino salicylic acid) on the course of *T. equiperdum, T. equinum,* and *T. brucei* infections in rats. Daily doses of 0·5 mg. per g. body weight of the sodium salt of the acid prolonged the life of the test animals, while 1 mg. per g. eliminated the parasites from the blood stream. Relapses occurred.—L. P. JOYNER.

ROVEDA, R. J. & DE BERGUE, C. E. (1950.) Trichomoniasis aviaria. [**Avian trichomoniasis.**]—*Rev. Med. vet., B. Aires.* **32.** 69-76. 367

The authors reported the existence of *Trichomonas gallinae* infection in Leghorn hens, and gave a short description of the parasite, and the symptoms and lesions in the host.

—I. W. JENNINGS.

VACCARI, I. (1949.) I. La tricomoniasi dei piccioni: La penicillina e la streptomicina nell'isolamento in coltura pura di *Trichomonas columbae.* II. Coltura del *Trichomonas columbae* e del *Trich. foetus* in terreno di Petragnani-Locke-Siero (P.l.s.) ed in terreno L.E.S. modificato. III. L'acido folico, fattore di crescenza in L.E.S. modificato per il *Trich. columbae* e per il *Trich. foetus.* [**Culture media for *Trichomonas columbae* and *Tr. foetus.***]—*Atti Soc. ital. Sci. vet.* **3.** pp. 531-538. [English and French summaries.] 368

For isolation of *Tr. columbae* and *Tr. foetus,* the author used ordinary trichomonad culture media to which penicillin and streptomycin had been added. Both organisms could be cultivated indefinitely in Petragnani-Locke serum medium and in Locke-egg serum (L.E.S.) medium. More luxuriant cultures of both protozoa were obtained in L.E.S. medium to which folic acid had been added.—L. BADIALI.

FARMER, R. K. (1950.) **Infectious enterohepatitis (blackhead) in turkeys: A study of the prophylactic and therapeutic value of certain compounds.**—*J. comp. Path.* **60.** 294-310. 369

Using artificially infected poults a number of compounds were tested. Three of the substances used showed promise namely: vioform (5 chloro - 7 iodo - 8 hydroxyquinoline) used in the food at the rate of 0·5%, acetarsol sodium in the drinking water at a concentration of 0·01% and arsphenamine diglucoside 0.4 ml. per lb. body weight of a 1·25% solution intramuscularly every three days.—D. LUKE.

MCGREGOR, J. K. (1951.) **Enterohepatitis (blackhead) in turkeys. Report of an investigation concerning the value of 2-amino-5-nitrothiazole as a prophylactic and curative agent.**—*Canad. J. comp. Med.* **15.** 144-145. [Author's summary copied *verbatim.*] 370

It was demonstrated experimentally that 50 healthy six-week-old turkeys were afforded a high degree of protection against blackhead by 2-amino-5-nitrothiazole given in the feed daily at 0·05 per cent concentration. This experiment confirmed earlier work on the high prophylactic value of the drug. Two per cent of the birds thus treated died of blackhead, compared to a loss of 72 per cent in an untreated group of birds of equal numbers. Both groups were exposed to similar infective conditions. Under the conditions of this experiment, 2-amino-5-nitrothiazole, in 0·05 per cent concentration, exhibited no marked power to cure acute clinical enterohepatitis.

ALTMAN, I. E. (1951.) **Treatment of canine coccidiosis (*Isospora bigemina*) with aureo-**

mycin.—*J. Amer. vet. med. Ass.* **119.** 207-209. [Author's summary copied *verbatim.*] 371

The use of aureomycin in the treatment of coccidiosis in 25 dogs is described. All dogs were treated until the feces were negative for coccidial oöcysts.

The administration of aureomycin controlled diarrhoea within 48 hours. Clinical improvement was rapid, and there was no evidence of toxicity regardless of dosage administered.

HART, C. P., WILEY, W. H., DELAPLANE, J. P., GRUMBLES, L. C. & HIGGINS, T. C. (1949.) **Medication versus sanitation in the control of coccidiosis.**—*Poult. Sci.* 28. 686-690. 372

Continuous feeding of 0·0125% sulphaquinoxaline was a more effective prophylactic measure than removal and replacement of floor litter at seven-day intervals. There were no toxic symptoms in the treated birds and their weight gains were greater than those in the untreated.—JAS. G. O'SULLIVAN.

SWALES, W. E. (1951.) **On the chemotherapy of caecal coccidiosis (*Eimeria tenella*) of chickens. VIII. Field trials of broiler feeds medicated at a low level.**—*Canad. J. comp. Med.* **15.** 125-130. [Author's summary copied *verbatim.*] 373

Practical tests of broiler mashes medicated at a low level with nitrophenide and sulfaquinoxaline produced data indicating that death losses from coccidiosis were reduced when compared with losses in groups given therapeutic amounts of sulphamethazine for a brief period, and that the cost of producing the broilers on medicated feeds was slightly lower. Previous tests showed that such feeds are not efficient for preventing losses when susceptible started chicks are suddenly exposed to contaminated litter; therefore the results obtained in this work are not generally applicable to small farm flocks.

BELTRÁN, E. & VILLASANA, L. (1949.) Infectividad del plasma, filtrado y sin filtrar, en el paludismo aviario. [**Infectivity of filtered and unfiltered plasma in avian malaria.**]—*Rev. Inst. Salubridad Enfer. Trop.* **10.** 147-153. (English Summary). [Abst. in *Trop. Dis. Bull.* **47.** 443. (1950.), slightly modified.] 374

The risk of transmitting malaria infections during blood transfusion prompted this investigation as to how far the risk would be obviated by the substitution of plasma for whole blood in such transfusions. The experiments were made with *Plasmodium gallinaceum.* The two donor birds were very heavily infected, 81 and 84% of the erythrocytes being parasitized. The birds inoculated were chicks five weeks old. Five chicks were inoculated with plasma obtained by 15 min. centrifuging at 2,500 r.p.m.: some erythrocytes could be found in the plasma. All chicks became infected. Two other chicks were inoculated with plasma after double centrifuging as above, two periods of 15 min. Though microscopic examination revealed no erythrocytes both chicks developed infection. Five chicks were inoculated with plasma obtained by centrifuging for 15 min. at 2,500 r.p.m. and subsequently passed through a Seitz EK filter: none of the five chicks showed any sign of infection during the 40 days' period of observation.

PETRUCCELLI, J. M. (1950.) Experiencia sobre posibilidades de liofilizar sangre para la premunición de bovinos contra las piroplasmosis. [**Action of lyophilization on blood containing *Babesia bigemina.***]—*Rev. Med. vet., Montevideo.* **5.** 1008-1012. [English and French summaries.] 375

Whole blood after being defibrinated and filtered or red corpuscles infected with *Babesia bigemina* and *B. argentina,* was kept during 24 hours at room temperature, then for 48 hours at 5°–7°C. and for 48 hours at 1°–2°C. The blood placed in 25 ml. ampoules (10 ml. in each) was frozen at −1° −2° C. and the ampoules subjected to high vacuum for three hours. When needed, the dried blood was reconstituted with water. Subcutaneous or intravenous injection of this material in doses of 10 or 30 ml. to each of ten cattle produced negative results. Equally negative was the effect of intravenous injection of the lyophilized material obtained from infected red cells, in doses of 15-20-50 ml. All animals tested proved susceptible to non-lyophilized material. It was concluded that the process of lyophilization destroyed the activities of *B. bigemina* and *B. argentina.*—E. VAZQUEZ-LOPEZ.

SEN, M. R. (1951.) **Sarcosporidiosis in cattle in Bengal.**—*Indian vet. J.* **27.** 261-264. 376

Sarcosporidial infection seems to have caused death in 12 cattle and one goat as revealed by examination of heart blood smears.
—M. M. SINGH.

RAMANUJACHARI, G. & ALWAR, V. S. (1951.) **Some observations on sarcosporidiosis of domestic animals in Madras.**—*Indian vet. J.* **27.** 264-266. 377

Sarcosporidia in buffaloes are generally found in the oesophagus and tongue, in cattle

in the heart muscle and sarcospores in the blood stream are only found in cattle and sheep. Data collected at an abattoir indicate infection in 10% of buffaloes and in 1% of cattle.

—R. N. Seth.

Otten, E., Westphal, A. & Kajahn, E. (1950.) Über das Vorkommen von Toxoplasmose beim Hunde. Statistische Erhebungen. **[Toxoplasmosis in dogs.]**—*Mh. prakt. Tierheilk.* **2.** 305-308. 378

Of 84 dogs examined for *Toxoplasma gondii* infection by the Sabin-Feldman test 30 gave a positive reaction. In 7 of 35 dogs a latent infection was diagnosed. Toxoplasmosis was present in dogs with encephalitis and neuritis, and of 26 dogs with these symptoms 13 were infected. Of 15 dogs with chronic diarrhoea 7 gave a positive reaction.—M. L. Clarke.

Piekarski, G. (1950.) Toxoplasma gondii als Parasit des Menschen und der Tiere. [*Toxoplasma gondii*, **a parasite of man and animals.**]—*Z. Parasitenk.* **14.** 582-625. 379

This is a review of toxoplasmosis and records no original work. P. discussed the geographical distribution, morphology and systematic position of the parasite, cultural methods and infection of several animal hosts, including gundis (*Ctenodactylus gundi*), rabbits, mice, rats, g. pigs, dogs, cats, apes and birds. Serological reactions and tests used for diagnosis, modes of transmission, and chemotherapy were dealt with.—M. L. Clarke.

Born, W. C. (1951.) Natürliche Toxoplasma-Infektionen beim Huhn. **[Natural toxoplasma infection in fowls.]**—*Tierärztl. Umsch.* **6.** 27. 380

The existence of a case of human toxoplasmosis led to a search amongst domestic animals for a possible carrier. A dog and two out of three fowls examined gave a positive reaction to the Sabin-Feldman test. The possible importance of fowls in the transmission of the disease is discussed.—M. L. Clarke.

Ratcliffe, H. L. & Worth, C. B. (1951.) **Toxoplasmosis of captive wild birds and mammals.**—*Amer. J. Path.* **27.** 655-667. [Author's summary modified.] 381

During the last 10 years, 13 mammals and 14 birds developed fatal toxoplasmosis at the Philadelphia Zoological Garden. The disease is relatively rare, constituting less than 1% of all deaths. With one exception, the form of toxoplasmosis encountered was acute, and in all instances involved organs of both the thoracic and abdominal cavities. Clinical signs of localization of the organisms in the central nervous system were lacking. The brains of eight mammals and three birds of the series were closely examined at necropsy, and no lesions were found.

The predominant tissue changes were foci of necrosis in liver, spleen, heart, lymph nodes, and lungs. The more acute lesions were accompanied by infiltration of monocytes. In less acute lesions, monocytes and fibroblasts largely replaced the necrotic tissue. In the lungs, diffuse interstitial infiltration of monocytes and oedema usually characterized the disease, whether or not focal necrosis of the tissue had developed.

Nie, D. (1950.) **Morphology and taxonomy of the intestinal protozoa of the guinea pig,** *Cavia porcella.*—*J. Morphol.* **86.** 381-493. 382

An extensive study. Systematic descriptions are given of the protozoa observed.

See also absts. **443** (trypanosomiases and tsetse flies); **444** (surra, transmission experiments); **514** (malaria in the U.S.S.R.); **533** (diseases of game); **629** (report, Nyasaland Protectorate); **630** (report, U.S.A.); **632** (book, animal parasitology).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

Ubertini, B. (1949.) L'organizzazione della lotta contro l'afta epizootica. **[F. & M. disease control in Italy.]**—*Clin. vet., Milano.* **72.** 225-230. 383

The author describes the present chaos and stresses the need for planned production and distribution of vaccine rather than slaughter and segregation, owing to the economic and social conditions prevailing in Italy.

—G. G. Evans.

Lemétayer, E., Gursel, A. & Virat, B. (1951.) Recherches, chez le cobaye, de la transmission des anticorps et du virus aphteux de la mère au jeune. **[Transmission of foot and mouth disease antibodies and virus from dam to offspring in g. pigs.]**—*Ann. Inst. Pasteur.* **80.** 470-478. 384

Single doses of a simple F. & M. disease vaccine inoculated into gravid g. pigs produced immunity in their offspring lasting up to 60 days. Females inoculated with active virus transmitted the virus to the viscera of the foetus within 48 hours.—G. V. Laugier.

Wehmeyer, P. (1950.) Concentration de la séro-protéine chez le cobaye immunisé contre la fièvre aphteuse. **[Serum protein concen-**

tration in g. pigs immunized against foot and mouth disease.]—*Rev. Immunol. Thérap. antimicrob.* 14. 379-381. 385

Experiments on 119 samples of serum from g. pigs indicated that fasted, immunized, and hyperimmunized animals have higher serum protein concentrations than fully-fed adult, and very young animals.—G. DAVIES.

MICHELSEN, E. & SCHJERNING-THIESEN, K. (1949.) **Further studies on hemagglutination presumably due to the virus of foot-and-mouth disease.**—*Nord. Vet.-Med.* 1. 975-981. [In English. Abst. from authors' summary.] 386

Some experiments are described on the agglutinating capacity of F. & M. disease virus in relation to time, pH and temperature and also the course of the agglutination when living and dead virus, respectively, are used.

In practically all experiments carried out with virus stored at 40°C. the agglutination titre had a tendency to rise during the first days and then to fall off gradually.

Pyl's findings concerning the keeping qualities of viruses at different pH values seem doubtful. From the experiments reported it is plainly evident that different viruses stored at 4°C. within the pH range 5·5–6·5 have been able to preserve their pathogenicity for g. pigs for at least 1·4 and 7 days, respectively. This divergence in behaviour cannot be explained as attributable merely to the pH but presumably rather to the character of the ions, proteins, etc., transferred with the various viruses.

At 4°C. there is a gradual rise in the pH value and a fairly gradual fall in the agglutinin titre of the virus through the storage period.

pH-inactivated virus appears to be able to produce agglutination.

At 37°C. the pH rises rapidly and as a result there is masking of the capacity of the virus used to agglutinate rat corpuscles.

FRENKEL, H. S. (1951.) **Research on foot-and-mouth disease. III. The cultivation of the virus on a practical scale in explantations of bovine tongue epithelium.**—*Amer. J. vet. Res.* 12. 187-190. [Author's summary slightly modified.] 387

A description is given of procedures and facilities for mass production of F. & M. disease virus to be used for preparation of vaccine. Chloromycetin was useful in controlling bacterial contamination. The advantages of the cultured virus over that generally used for vaccine production are discussed.

SCHLEIFSTEIN, J. & TOMPKINS, V. (1951.) **Rabies in cattle—a technique for removal of the cerebellum for laboratory examination.**—*J. Amer. vet. med. Ass.* 119. 130-132. [Authors' summary copied *verbatim*.] 388

Observations on cattle brains submitted for diagnosis of rabies have shown that the cerebellum is the specimen of choice for morphologic demonstration of Negri bodies. A technique for removal of the cerebellum through the foramen magnum and a mailing outfit for submission of the specimen by mail are described. The technique and the outfit simplify the procedure of submitting specimens by the veterinarian.

PANDIT, S. R. (1950.) **Two instances of proved rabies in the tiger.**—*Indian med. Gaz.* 85. 441. 389

Basing his diagnosis on the demonstration of Negri bodies P. reported two cases of rabies in Bengal tigers.—N. S. DATT.

BAHOV, J. (1950.) Recherches histo-pathologiques sur la rage expérimentale chez les lapins et les cobayes. [**Histology of experimental rabies in rabbits and g. pigs.**]—*Bull. Histol. Tech. micr.* 27. 112-115. 390

Endothelial capillary cells and leucocytes in rabbits and g. pigs infected with rabies reveal granules coloured red by Giemsa stain. These granules are found regularly in the lungs, tongue, brain, muscles, testes, ovaries, etc. and are particularly marked in the lungs. They were not observed in the organs of similarly infected dogs, cats, mice and rats.

—ANITA M. MANDL.

WONG, D. H. & FREUND, J. (1951.) **Fixed rabies virus in blood following intracerebral inoculation in mice and rabbits.**—*Proc. Soc. exp. Biol., N.Y.* 76. 717-720. [Authors' summary copied *verbatim*.] 391

Fixed rabies virus was recovered from the blood stream of the mouse and rabbit during the first 3 hours following intracerebral inoculation.

STEFANSKY, V. K. & DIACISCINA, A. E. (1946.) Lyssa: complicazioni da vaccinazioni antirabbiche. [**Immunization against rabies.**]—*Vracebnoe Dielo.* 26. 67. [Abst. from abst. in *G. Batt. Immun.* 36. 89-90. (1947.)] 392

A discussion of the complications following vaccination against rabies in human beings.

—L. BADIALI.

AHUJA, M. L. & BROOKS, A. G. (1950.) **Hydrophobia in India.**—*Indian med. Gaz.* 85. 449-453. 393

The authors describe the mythological and historical aspects of rabies and record interesting

features regarding symptoms, incubation period, and prophylactic treatment of hydrophobia on the basis of clinical data collected by them.—M. S. MENON.

MURTHY, V. N. K. (1950.) **Toxic factor(s) in vaccinia virus and its neutralization by penicillin.**—*Indian med. Gaz.* **85.** 487-488. 394

M. described the effects of the external application twice daily for five days from the day of vaccination, of penicillin at the rate of 1,000 units per ml. and streptomycin at 10,000 units per ml., each singly or together to the vaccinated area of buffalo calves. The streptomycin treatment reduced the bacterial contamination of vaccine pulp to a minimum, but did not reduce the temperature to normal, whereas the animal treated with penicillin and streptomycin together had normal temperature throughout. M. considered that penicillin neutralized the effect of the virus or some toxic factor intimately associated with the virus which caused the development of high temperature. The literature was discussed.—E.M.J.

HAIG, D. A . (1951.) **Fowl-pox vaccination in South Africa with egg-propagated fowl and pigeon-pox viruses.**—*Onderstepoort J. vet. Sci.* **25.** 17-29. [Author's summary copied *verbatim.*] 395

Fowl-pox as it occurs in the Union of South Africa is reviewed briefly together with relevant literature on the methods of immunization.

In South Africa until recently vaccine prepared from virus propagated on pigeons has been used for immunization of poultry. The reasons for abandoning this vaccine are discussed. The technique of propagating fowl- and pigeon-pox vaccine in eggs is discussed, attention being paid to: (a) The influence of temperature of incubation; (b) The time allowed for multiplication; (c) The distribution of virus in the eggs; (d) The virus titre of infected membranes; (e) The isolation of pigeon-pox virus strains. The preparation of fowl-and pigeon-pox virus vaccine is described with particular reference to: (a) Potency of the vaccine and its estimation; (b) The keeping quality; (c) The correlation between infectivity for egg and for chickens.

CAIRNS, H. J. F. (1951.) **The growth of influenza viruses and Newcastle disease virus in mouse brain.**—*Brit. J. exp. Path.* **32.** 110-117. [Author's summary copied *verbatim.*] 396

The multiplication, after intracerebral inoculation in mice, of unadapted strains of influenza and Newcastle disease virus was compared with that of an adapted, neurotropic strain, neuro-WS. The difference, as judged by changes in infectivity titre, seemed to lie in the behaviour of unadapted strains during the later stages of their multiplication, rather than in any inherent incapacity of the unadapted strains to undergo cyclic multiplication. Thus, as far as production of infectious virus was concerned, the first reproductive cycle of unadapted PR8 proved indistinguishable both in rapidity and magnitude from that of neuro-WS.

Some of the factors which control the apparent growth of a virus in a tissue are discussed.

APPLEBY, J. C., HIMMELWEIT, F. & STUART-HARRIS, C. H. (1951.) **Immunisation with influenza virus A vaccines. Comparison of intradermal and subcutaneous routes.**—*Lancet.* **260.** 1384-1387. [Authors' summary copied *verbatim.*] 397

Volunteers were inoculated subcutaneously with 1 ml. doses of influenza-virus vaccines adsorbed on to aluminium phosphate, or intradermally with 0·1 ml. amounts of virus vaccines prepared by red-cell adsorption and elution. All the vaccines were concentrated tenfold in terms of the original allantoic fluids. The vaccines were prepared either from influenza-A virus (PR8) or an A prime strain (NED/1/1949). General reactions were insignificant, and local reactions, though frequent after subcutaneous immunisation, were trifling.

The antibody response to the strain of virus incorporated in the vaccine was determined by comparing serum titres before and two weeks after vaccination by the agglutination-inhibition test. Significantly higher antibody levels were present after immunisation in the subcutaneously inoculated volunteers compared with those in the volunteers inoculated intradermally. The enhancement of antibody levels induced by the PR8 vaccines seemed to be greater than that following the A prime virus, irrespective of the route of immunisation. The antibody titres attained two weeks after immunisation were maintained in more than half the volunteers, as shown by serum samples collected two months after vaccination.

Though PR8 vaccines did not stimulate antibodies against the 1949 A prime virus, the vaccines made from the latter occasionally induced alterations in titre of antibodies to PR8 virus, and regularly produced a rise in antibodies to a second A prime virus (A/SWE/1950.).

HULLINGHORST, R. L., BURNS, K. F., CHOI, Y. T. & WHATLEY, L. R. (1951.) **Japanese B encephalitis in Korea. The epidemic of 1949.**—*J. Amer. med. Ass.* **145.** 460-466. **398**

An account of the disease in man. The authors gave a table of the results of complement fixation and of virus neutralization tests on the serum of animals of the following species in Korea: a fowl, goats, cattle, sheep, horses, swine and dogs. Specific histories of the individual animals were usually not obtainable, but neutralizing antibodies were present in a high percentage of the few cattle, sheep, horses and swine; such antibodies were present in the one fowl that was tested. There were complement-fixing antibodies in two sheep, seven horses and six swine.

BONADUCE, A. & MONTEMAGNO, F. (1950.) Osservazioni e ricerche sull'encefalomielite infettiva degli equini della Campania. **[Equine encephalomyelitis in Campania.]**—*Clin. vet., Milano.* **73.** 106-119. **399**

The authors described a type of equine encephalomyelitis observed in Campania from 1943-48. From animal inoculation tests, cultivation on chick embryos and histological examination, it was concluded that the disease was not Borna disease but a variant of equine encephalomyelitis. The epidemiology was discussed and the authors speculated whether it was introduced by the pack mules of foreign armies stationed in the district in 1943, the period of the first reported outbreak, or whether previous outbreaks existed which had not been properly reported.—B. BALDELLI.

MUKERJI, A. (1951.) **Some aspects of immunity in rinderpest.**—*Indian vet. J.* **27.** 351-355. **400**

Among several factors responsible for the varied nature of immunity conferred by the goat-adapted virus, the atmospheric temperature and solar radiation have a deleterious effect on the degree of antibody formation in vaccinated animals. M. attributes the longer duration of immunity in hill bulls vaccinated with goat-adapted virus to the greater secretion of adrenalin, pituitrin and thyroxin in the cold climate of the hills and considers that cattle in the plains should be vaccinated during the winter months to achieve immunity of a lasting nature. Animals vaccinated during the summer should not be overworked but kept in the shade and fed a rich protein diet. He speculates on the possibility of the existence of more than one strain of rinderpest virus.

—C. SEETHARAMAN.

RAMIREZ, A. M., GRAY, M. L. & THORP, F., JR. (1951.) **A study of the pathology of the chicken embryo infected with a transmissible agent isolated from sheep lungs.**—*Amer. J. vet. Res.* **12.** 201-205. [Authors' summary slightly modified.] **401**

A non-bacterial transmissible agent was isolated from pneumonic lungs of sheep. This agent was maintained on the chorioallantoic membrane of developing chick embryos through 19 serial passages. By passage of this agent in chick embryos, pneumonia was produced in the embryonic lung.

A constant and characteristic macroscopic change was the presence of "pocks" on the chorioallantoic membrane. The most persistent and distinctive microscopic lesions of the chorioallantic membrane were the epithelial pearls formed by proliferation of the ectodermal cells in the mesenchyma. Necrosis of the ectodermal layer and necrosis and hyalinization of the epithelial pearls were also observed. An apparent interference with growth processes in the chick embryos was observed.

The agent isolated in this study suggested a pneumotropic type of virus.

LARRE, J. (1949.) Une expérience de vaccination contre la peste porcine. **[Experience with swine fever immunization.]**—*Maroc méd.* **28.** 493-494. **402**

The use of a vaccine made from swine fever virus treated with crystal violet is reported. A delay of three weeks is necessary before immunity is established. An epidemic of swine fever was halted by the use of the vaccine. The results of immunizing 64 pigs in the infected area and 1,171 pigs in healthy areas are given.—G. FULTON ROBERTS.

GIRARD, H., MACKOWIAK, C., LORRIN, R. & GUILLET, J. (1949.) Vaccination contre la peste porcine à l'aide de divers vaccins au cristal-violet. **[Use of crystal violet vaccines against swine fever.]**—*Bull. Soc. Sci. vét. Lyon.* **51.** 100-110. **403**

Excellent results were obtained with Doyle's vaccine. This consists of defibrinated blood from an infected pig to which crystal violet in ethylene glycol has been added and which has been kept for 14 days at 37°C. It is injected subcutaneously. The use of infected spleen tissue in addition to the blood did not improve the efficacy of the vaccine. A vaccine prepared according to a Brazilian formula from infected blood and spleen, with crystal violet, phenol and glycerin, and injected intradermally, gave no protection. The results with intra-

dermal injection of a third similar type of vaccine were variable.—A. MAYR-HARTING.

HARNACH, R. (1949.) Studie o korelaci (interferenčním fenomenu) protičervenkové imunity k nespecifické chráněnosti proti infekční obrně vepřů (Kloboukově obrně). **[Interference phenomenon between swine erysipelas and Teschen disease.]**—*Spisy vys. Školy. Vet., Brno.* **17.** Paper No. 153. pp. 1-14. [French and Russian summaries.] 404

Of ten pigs actively immunized against *Erysipelothrix rhusiopathiae* infection, some by the simultaneous method, others with gonacrine vaccine, eight were resistant 30–60 days later to intranasal inoculation of 1–8 ml. of 20% brain suspension from pigs that had died of Teschen disease. One pig given 10 ml. of the suspension became infected and was killed *in extremis*. The other pig that died was inoculated with only 1·7 ml. of the suspension. All the four controls that had not been immunized against *E. rhusiopathiae* infection died of Teschen disease.

H. considers the relative resistance of the vaccinated pigs to Teschen disease to be related to the interference phenomenon.—F.E.W.

PILET, E. & VERGE, J. (1951.) La méningo-encéphalomyélite enzootique du porc (Maladie de Teschen). **[Porcine encephalomyelitis, (Teschen disease.)]**—*Bull. Off. internat. Epiz.* **35.** 337-362. 405

This contribution sets out to summarise the present state of knowledge with regard to Teschen disease, and constitutes the first part of a report dealing with the disease in Madagascar and Réunion.

Incidence, aetiology, symptomatology and histopathology are dealt with. There is little new information. A section devoted to prophylaxis contains a comparison of the results obtained with various inactivated vaccines, of which the best appears to be a formolized aluminium hydroxide adsorbate with the addition of crystal violet. Attention is drawn to the work of Harnach [see preceding abst.]. There are 60 references.—J. T. DONE.

PIERCY, S. E. (1951.) **A pox-like condition of swine in Kenya.**—*Vet. Rec.* **63.** 574-575. [Author's summary copied *verbatim*.] 406

There exists in Kenya a very mild, sporadic disease simulating swine pox which affects young pigs and is characterised by the formation of pox-like scabs. Recovery is usual and spontaneous and there is little tendency for the disease to spread. Affected animals show little or no systemic reaction.

BAY, W. W., DOYLE, L. P. & HUTCHINGS, L. M. (1951.) **The pathology and symptomatology of transmissible gastroenteritis [in pigs.]**—*Amer. J. vet. Res.* **12.** 215-218. [Authors' summary slightly modified.] 407

Transmissible gastro-enteritis is a sporadic disease characterized by diarrhoea, vomiting, dehydration, and high death losses in piglets. On P.M. examination, there may be found, singly or in combination, gastritis, enteritis, degeneration of the kidneys, congestion of the mesenteric blood vessels, and an atony of the intestine with fluid contents. The microscopic changes in the mucosa of the gastro-intestinal tract varied from congestion of the terminal blood vessels to desquamation of epithelium, necrosis and cellular infiltration. In the kidney, albuminous degeneration, congestion of the blood vessels of the cortex and medulla, and desquamation of some tubular epithelium was the most common finding. Inclusion bodies were not demonstrated with the techniques employed.

LUQUE, J. M. S. (1950.) Contribución a la semiología del líquido céfalorraquídeo en el perro. **[Globulin test of the cerebrospinal fluid in dog distemper.]**—*An. Fac. Vet., Madrid.* **2.** 112-122. [English, French and German summaries.] 408

Results of globulin tests of the cerebrospinal fluid were clearly to strongly positive in seven cases of the nervous form of distemper, doubtful in five incipient and in three non-nervous cases and negative in ten controls.—E. PANTELOURIS.

MANSI, W. (1951.) **The isolation of a neurotropic virus from a dog suffering from the so-called nervous distemper.**—*Brit. vet. J.* **107.** 214-229. [Author's summary silghtly modified.] 409

This paper records the isolation of a strain of distemper virus ("Glasgow S123") with very definite neurotropic properties. Ferrets and dogs are susceptible to the infection, developing, after inoculation, thermal and clinical reactions. Nervous syndromes form the main characteristic of this virus. Rabbits, g. pigs and mice are not susceptible to this virus by any route of infection.

In the ferret the thermal reaction takes place between the 4th and 8th day, usually on the 7th day after inoculation. After intracerebral and intraperitoneal inoculation only nervous fits appear. These occur between the 16th and 26th days, and are followed by the death of the animal within 2½–5 hours after the onset of the first fit. After continuous subcutaneous or intraperitoneal passage in the ferret, mouth lesions, swollen eyelids, with purulent

eye discharge and diarrhoea appear from the 10th day, and the animal usually dies between the 17th and 26th day following the development of nervous fits.

In the dog, a thermal reaction usually commences between the 3rd and 6th day, and may last for one or two days, and sometimes only for a few hours. A diphasic thermal reaction is quite common. Mortality in susceptible puppies is high. However, two dogs over two years old and of unknown origin were found to be more resistant to the subcutaneous inoculation of virus. The duration of the disease is about 6–12 days. Nervous syndromes which were encountered among all fatal cases are described.

Serologically, the "Glasgow S123" virus is immunologically identical with canine distemper virus "Laidlaw-Dunkin", Wellcome hard-pad virus, and Green distemperoid virus. It is unrelated to lymphocytic choriomeningitis virus, as shown by animal inoculation tests, complement-fixation, and cross-immunity tests.

ULLRICH, K. (1950.) **Some German experiences in the treatment of the nervous forms of canine distemper.**—*Vet. Rec.* **62.** 235-238. 410

The basis of prognosis and of the treatment adopted in the Clinic for the Smaller Domesticated Animals in the University of Berlin is set out. Dogs with masticatory cramp and high fever, especially if the temperature is above 103·5° F., are excluded from treatment. Those with temperatures between 102° and 103° F. and without distinct emaciation are admitted for treatment, but this is continued only if there is no additional rise in temperature. No attempt is made to treat cases of rhythmic myoclonia, *i.e.*, the condition wrongly termed "tic", where there are seen clonic convulsions involving certain muscle groups. Neither is treatment attempted in cases of paresis or paralysis with a temperature exceeding 103·5° F., nor in those cases with a temperature of 102°–103° F. or when there exists a severe rhinitis, for these usually develop a meningo-encephalitis. When the dog has tonic-clonic spasms with transitory mental confusion, treatment is begun only if there is no fever, convulsions are infrequent and the ravenous hunger (bulimia) following such convulsions is not intense.

Two therapeutic measures are stated to have proved of value among a very wide range of products tested. In hyperexcitable cases small tablets ("luminalettes") each containing 0·015 g. of diethylbarbituric acid are given *per os* at the rate of 2–4 daily, together with a subcutaneous injection of 1 ml. (containing 0·04 mg. active material) of anti-epileptic material obtained from the venom of rattlesnakes (*Crotalus* spp.) and marketed as "epileptasid".

—A. N. WORDEN.

MARTIN, L.-A. (1950.) La sensibilité du singe marocain *Maçaca sylvanus* (Linné 1758) au virus de Carré. [**Susceptibility of monkeys (*Macaca sylvanus*) to distemper.**]—*Bull. —Acad. vét. Fr.* **23.** 457-462. 411

Ferret-adapted canine distemper virus was successfully transmitted to monkeys. Active disease was produced. Three direct passages were effected and the virus identified by passage back to ferrets or rabbits.

—G. V. LAUGIER.

SOMPOLINSKY, D. (1949.) Smitsom hjernebetaendelse hos raev. Erfaringer fra sygdomsudbrud i 3 danske raevefarme samt eksperimentelle undersøgelser. [**Encephalitis in foxes. Outbreaks on three Danish fox farms and experimental work.**]—*Nord. Vet.-Med.* **1.** 931-957. [Abst. from English summary.] 412

The epidemiology, symptoms and lesions of fox encephalitis on Danish fox farms are described.

On one farm the total mortality was 26%, but there was a pronounced difference between the mortality for blue fox (16·4%) and silver fox (36·4%). The macroscopic as well as the microscopic changes were characterized by damage to the walls of the small blood vessels, especially in the meninges, brain and liver, but sometimes also in other organs.

Demonstration of intranuclear inclusion bodies is a good diagnostic aid, but in the present material it gave a positive result in only half the cases examined.

S. failed to set up the disease in ferrets, mice and g. pigs. Transmission to dogs succeeded only in one instance. On the other hand, transmission to foxes was successful in most cases and American anti-fox encephalitis serum had a protective effect.

EVANS, C. A., DOWELL, M. & GREEN, R. G. (1950.) **The effects of viruses on intraocular tissues. I. Infections with the virus of fox encephalitis (canine hepatitis).**—*J. infect. Dis.* **86.** 1-11. 413

Red foxes, dogs and racoons were highly susceptible to intra-ocular infection with the virus of fox encephalitis. The resistance of cats, rabbits and opossum were not based on viricidal activity of their sera. In foxes and racoons, inclusion bodies were most numerous in the endothelial cells lining the anterior

chamber of the eye, and in fibroblasts and macrophages, but were generally lacking in chromatophores and in the elements of the retina of neural origin.—CLIVE BRIGGS.

NIVEN, J. S. F. (1950.) **The histology of "grey lung virus" lesions in mice and cotton-rats.**—*Brit. J. exp. Path.* **31.** 759-766. **414**

It was impossible to decide on histological grounds alone which pathological changes in the lungs of mice and cotton-rats infected with "grey lung virus" were non-specific, and which were due primarily to the presence of the virus. The rapid disappearance of the alveolar cells and repression of the epithelial hyperplasia following antibiotic therapy appeared to be closely associated with the actual infecting agent, but the perivascular and peribronchial infiltration was of a non-specific nature; capillary permeability may also be affected by the virus, resulting in occasional haemorrhages. There was no evidence that the virus possessed neoplastic potentialities.—CLIVE BRIGGS.

KUJUMGIEV, I. (1950.) Sulla classificazione immunologica del virus dell'epizoozia aviaria dominante in Bulgaria dal 1943. [**Immunological classification of the virus of the epidemic in fowls in Bulgaria in 1943 (Newcastle disease.)**—*Zooprofilassi.* **5.** 234-240. **415**

By means of cross-immunity tests with the virus from the 1943 Bulgarian epizootic, using a classical fowl plague virus of Roumanian origin and one of Italian origin, a strain of Newcastle disease virus and a live laryngotracheitis virus vaccine, K. identified the Bulgarian virus with Newcastle disease.

—B. BALDELLI.

DOLL, E. R., MCCOLLUM, W. H. & WALLACE, M. E. (1951.) **Susceptibility to Newcastle disease infection of chickens from hens immunized with live virus vaccines.**—*Amer. J. vet. Res.* **12.** 232-239. [Abst. from author's summary.] **416**

Yolk-conferred antibody carried over to the progeny of hens vaccinated with live Newcastle disease vaccines or recovered from natural infection did not prevent experimental infection with Newcastle disease virus (N.D.V.) in chickens under two weeks of age. Chickens obtaining significant serum-neutralization and haemagglutination-inhibiton (HI) antibody from the egg yolk readily developed symptomatic infection or succumbed to infection. Asymptomatic infection occurred with weakly or mildly pathogenic strains.

Employing the B1 strain of N.D.V., parentally immune chickens may be infected by the respiratory route without the stimulation of a detectable HI antibody response. The occurrence of infection was confirmed by resistance to subsequent challenge exposure.

SEETHARAMAN, C. (1951.) **Ranikhet (Newcastle) disease. Review of work done with special reference to vaccination, at the Indian Veterinary Research Institute, Mukteswar-Kumaun, U.P.**—*Indian vet. J.* **37.** 331-336. **417**

S. records that vaccination with chemically treated virus and the serum virus method gave unsatisfactory results. Sufficient attenuation could not be attained by passaging the virus in duck eggs, and the duckling-passaged virus produced undesirable reactions. Pigeon-passaged virus might on further passages give useful results. Hen-egg-passaged virus has provided a safe, cheap and satisfactory vaccine for immunization—the possibility of introducing a freeze-dried vaccine is under investigation.—GAJINDAR SINGH.

GRUMBLES, L. C. & BONEY, W. A., JR. (1950.) **Infectious sinusitis of turkeys.**—*Proc. 54th Ann. Meeting U.S. Livestock sanit. Ass.* pp. 166-170. [Authors' summary slightly modified.] **418**

The typical pattern of embryo mortality for two strains of a non-bacterial agent causing infectious sinusitis of turkeys is presented in two tables.

Eggs were obtained from infected birds in five flocks, hatched and the poults observed for at least 10 weeks. None of the poults hatched from these eggs developed sinusitis during the observation period. Attempts to isolate the causative agent from embryos which died during the incubation period were negative.

Birds which were inoculated with a strain (Bo) of infectious sinusitis material and allowed to remain infected for 52 days, then treated with streptomycin, were still susceptible when challenged with the same strain of material.

PRIER, J. E. (1951.) **Concentration of the virus of infectious sinusitis of turkeys with methyl alcohol.**—*Amer. J. vet. Res.* **12.** 230-231. [Author's summary slightly modified.] **419**

The virus of infectious sinusitis of turkeys was precipitated by methyl alcohol at low temperatures. There was, apparently, nearly 100% recovery of the organism in the resuspended precipitate as determined by inoculation of experimental turkeys. Some increase in lethal characteristics of the organism for young turkeys apparently resulted.

OLSON, N. O. (1950.) **A respiratory disease (bronchitis) of quail caused by a virus.**—*Proc. 54th Ann. Meeting U.S. Livestock sanit. Ass.* pp. 171-174. [Author's summary copied *verbatim*.] 420

A disease of quail caused by virus is described. The disease produced a high mortality and respiratory symptoms similar to infectious bronchitis of chickens.

The virus was recovered only in the early stages of the disease. Inoculation into embryos produced dwarfing in four to eight days and usually death by the tenth day. The virus became more virulent for embryos on succeeding passages. The virus failed to produce red-cell hemagglutinins. Serum neutralization tests with bronchitis antiserum gave inconclusive results. The egg-propagated virus produced a disease in quail similar to the natural infection. Turkeys and chickens were refractory to infection. The virus was isolated from one chick seven days after challenge. The possibility of cross immunity and/or different types of bronchitis virus is pointed out.

LEVI-CASTILLO, R. (1951.) Die Epidemiologie des Buschgelbfiebers in Südamerika. [**The epidemiology of jungle yellow fever in South America.**]—*Z. Tropen. Parasitol.* **2.** 315-322. [Abst. from English summary.] 421

Mosquitoes of the genus *Haemagogus* are the main host and reservoir for the virus of jungle yellow fever in South America, *H. spegazzinii* being the most important transmitter. Probably other *Haemagogus* species and *Aedes* species can also transmit the infection.

Jungle monkeys are intermediate hosts. After being bitten by infected mosquitoes they carry the virus for several days, after which they either die from the infection or become immune.

Human beings acquire jungle yellow fever in endemic areas only occasionally.

When trees are felled Haemagogus mosquitoes are driven from the top foliage, their usual habitat, and, being hungry, attack man. Jungle clearings and streams form a natural barrier against the spread of mosquitoes, and hence also of jungle yellow fever. For an epidemic outbreak infected mosquitoes in large numbers are required as well as susceptible and non-immune mammals. As these conditions are rarely fulfilled, the epidemic curve is undulating and the disease confined to regions of varied extension.

DE ROBERTIS, E. (1949.) **An electron microscope analysis of nerves infected with the B virus.**—*J. exp. Med.* **90.** 291-295. [Author's conclusions modified.] 422

Rabbits were infected with B virus in the right gastrocnemius muscle and both sciatic nerves were fixed and examined under the electron microscope, after periods varying from 26 to 144 hours. Starting at 72 hours, a few neurotubules of the right sciatic had spherical particles, ranging between 300 and 600 Å. The number and size of the particles increased with time and appeared to reach a maximum at 144 hours when the paralysis started. At this moment the proximal part of the left sciatic nerve had dense particles. The relation of the particles with the periodic structure of the neurotubues was studied both in preparations stained in phosphotungstic acid and in those shadowed with chromium. The small and medium sized particles were located within the edges of the neurotubules, and the large particles appeared to be attached to the neurotubules. The possible significance of the dense particles is discussed.

HORSFALL, F. L., JR. (1949.) **Prospects for the control of viral diseases by chemical agents.**—*Canad. med. Ass. J.* **60.** 439-447. 423

H. recognized five separate steps which occurred during the course of infection of a single susceptible cell with one virus particle. These were: (1) Contact or combination between the virus particle and the susceptible host cell. In some instances a cofactor was essential in this phase of infection. (2) Alteration of host cell surface by viral action. (3) Penetration of the host cell or its membrane by the virus particle in order that it might obtain energy from intracellular metabolic processes. (4) Multiplication of the virus. (5) Release of newly formed virus particles from the infected cell. Based on the five step cycle H. surveyed various possibilities which in theory could provide means by which viral diseases might be cotrolled. A sharp distinction was made between prophylactic and therapeutic procedures. Concerning prophylactic measures specific immunization is an example and is of value in smallpox and yellow fever. Artificial alteration of the surface of susceptible cells by chemical or enzymatic action is a possible means of prophylaxis and has been shown to be effective in a limited way and for a short time in animals with influenza virus. A chemical analogue of the cofactor required for adsorption of the agent by a susceptible cell could block adsorption; also the use of a different virus to induce viral interference could be invoked. Recently prophylactic effects of various nutritional deficiencies have received attention.

Regarding therapeutic procedures there appear to be three possibilities. The first is the production of a blockade of some metabolic system of the host cell which is essential for the multiplication of a virus. The induction of the viral interference phenomenon by the injection of a different virus is a theoretical therapeutic possiblity but probably is not of more than academic interest. Various nutritional deficiencies might be invoked as feasible therapeutic procedures.

Upon analysis it becomes apparent that the first three prophylactic procedures prevent combination between virus and susceptible cell. In other words they block step 1. All other procedures, however, including each of those which seems to offer some merit as a therapeutic possibility obtain their effects because they inhibit viral multiplication within the cell and do so, it appears, by blocking step 4. The various methods are discussed in detail and experimental evidence is cited.

—P. J. G. Plummer.

Puck, T. T., Garen, A. & Cline, J. (1951.) **The mechanism of virus attachment to host cells. I. The role of ions in the primary reaction.**—*J. exp. Med.* **93.** 65-88. 424

Cation concentration influences the attachment of T_1 bacteriophage to *Bact. coli*, type B, or to an inorganic surface, the optimal temperature being 37°C. In both cases specificity is maintained and it is suggested that specific virus cell attachment is dependent on electrostatic activity at the two surfaces.

—John Seamer.

Verge, J. & Goret, P. (1950.) Les méthodes de l'immunization dans les maladies animales à ultravirus. [**Methods of immunization against virus diseases of animals.**]—*Rev. Path. comp.* **50.** 372-388. [English summary.] 425

The authors draw attention to matters requiring consideration for successful immunization. Multiple antigens in a given species of virus point the need for polyvalent vaccines.

Active immunization may be produced by inoculation with a virus of a related species or one modified by passage or physical influences such as age, heat, irradiation and desiccation. Chemical methods such as treatment with formol or crystal violet may be suitable.

The immunizing power of the vaccine may be enhanced by the addition of adjuvants such as alumina gel, lanolin and egg yolk. The adjuvants may act by limiting the *in vivo* dispersal of the vaccine or by the stimulating effect of mild local inflammation [though the work of Holt suggests the explanation that the adsorption of vaccine on to particulate matter may dispose the vaccine in a more accessible way for the antibody-forming tissues].

—G. Fulton Roberts.

De Prada, J. (1949.) La fiebre "Q" en España. [**Q fever in Spain.**]—*Med. Colonial.* **14.** 471-495. [Abst. from abst. in *Trop. Dis. Bull.* **47.** 460. (1950.)] 426

The existence of Q fever in Spain was demonstrated by the isolation of *Rickettsia burneti* from the blood of patients in Salamanca and from the tick *Hyalomma savignyi* (often referred to as *H. aegyptium*).

The disease is believed to be widespread in Spain, and arrangements have been made for diagnosis by modern methods at a central laboratory.

A history of Q fever, and a general description of the disease and of the vector tick are given. There are two maps showing the localities from which cases have been reported and in which *H. savignyi* has been found and a bibliography containing 140 references is appended.

Anon (1947.) Maladie de Derrick-Burnet (Q. fever). [**Q fever** (*Rickettsia burneti*).]—*Ann. Rep. Inst. Pasteur Maroc.* pp. 5-11. 427

Q. fever has been shown to infect sheep, goats, bovine species and camels as well as various rodents, in Morocco.

The infection has been shown to pass through the egg of *Hyalomma* which may be regarded as the natural host. The principal reservoirs of infection are colonies of gerbils which are infested with *Hyalomma*. Rhipicephalus and ornithodoros ticks from the same burrows have never been shown to be infected. The large mammals serve to disseminate the infection either by carrying infected ticks from place to place or by carrying the virus during an attack of the disease. No cases of Q fever in human beings have been encountered in Morocco.

A diagnostic agglutination test, using a suspension of *R. burneti* prepared from infected ticks, is described.—A. Foggie.

Jadin, J. & Giroud, P. (1951.) La fièvre Q au Ruanda-Urundi. [**Q fever in Ruanda-Urundi, Belgian Congo.**]—*Ann. Soc. belge Méd. trop.* **31.** 159-177. [Flemish summary.] 428

Research on two epidemics of Q fever is described in detail. Two strains of *R. burneti* were isolated from man and from ticks. The

sera of a high proportion of domestic animals in the region contained antibodies.

—G. V. Laugier.

Huebner, R. J. & Bell, J. A. (1951.) **Q fever studies in Southern California. Summary of current results and a discussion of possible control measures.**—*J. Amer. med. Ass.* **145.** 301-305. Abst. of discussion p. 309. [Author's summary slightly modified.] **429**

The discovery of Q fever in the Los Angeles area of California in 1947 provided an opportunity for studies of sources and modes of spread of the disease in an endemic area. Epidemiological study of 300 cases and numerous epidemiological studies of almost 10,000 persons in selected population groups provided considerable evidence, in addition to that already available in previous studies, that the major factor in the spread of Q fever to man is association with affected livestock. In more detail these studies clearly showed that dairy cattle and some of their raw products were the most frequent sources of human infection in the Los Angeles area. Persons most apt to become infected are those who have occupational exposure to livestock, those who live near a dairy or livestock yards and those who use raw milk in their households.

Epizootological and environmental studies showed that dairy cows and their raw products represented a tremendous reservoir of *R. burneti* in the Los Angeles area. The fact that Los Angeles County is a major livestock centre an contains one of the largest and most concentrated dairy industries in the world makes it probable that Q fever will remain a public health problem in that area until effective control measures are developed. Although universal pasteurization of milk will help to prevent some infections and the vaccination of occupationally exposed groups may afford protection to those groups, it appears that truly effective control of the disease in man must await the development of measures for control of infection in the animal sources of human disease.

Coombs, R. R. A. & Stoker, M. G. P. (1951.) **Detection of Q-fever antibodies by the anti-globulin sensitisation tests.**—*Lancet.* **261.** 15-17. [Authors' summary copied *verbatim.*] **430**

The anti-globulin sensitisation test has been applied to the examination of human sera for antibodies against *Rickettsia burneti.*

This test is more sensitive than the haemolytic complement-fixation test, and much more sensitive than the direct agglutination test. The method promises to be specific, but many more sera will have to be examined before definite conclusions can be drawn.

Marmion, B. P., MacCallum, F. O., Rowlands, A. & Thiel, C. C. (1951.) **The effect of pasteurization on milk containing *Rickettsia burneti*.**—*Mon. Bull. Min. Hlth publ. Hlth Lab. Serv.* **10.** 119-128. [Authors' summary slightly modified.] **431**

Milk naturally infected with *R. burneti* and milk with added *R. burneti* has been treated at various temperatures in a small commercial high-temperture short-time pasteurization plant.

Treatment of naturally infected milk at 154–156°F. for 15 sec. was sufficient to render the milk non-infective for g. pigs. Treatment of the artificially infected milk containing large numbers of rickettsiae at a temperature of 158-159°F. for 15 sec. was not successful in destroying *R. burneti* which was, however, inactivated at 161°F. for 15 sec. Milk with added *R. burneti* was tested in a laboratory pasteurization experiment and it was found that exposure to a temperature of 143·5–144°F. for 30 min. rendered the milk non-infective for g. pigs.

Kalra, S. L. & Rao, K. N. A. (1949.) **Typhus group of fevers in Jubbulpore area.**—*Indian J. med. Res.* **37.** 373-384. **432**

Different typhus fevers of the Jubbulpore area with their epidemiology, clinical syndrome, laboratory diagnosis and animal experimentation are described. A strain of murine typhus rickettsia isolated from ticks (*Boophilus australis*) is also described.—P. C. Gangulee.

Powell, A. M., Snyder, M. J., Minor, J. V., Jr., Benson, J. F. & Woodward, T. E. (1951.) **The use of terramycin in Rocky Mountain spotted fever.**—*Johns Hopk. Hosp. Bull.* **89.** 30-38. [Authors' summary copied *verbatim.*] **433**

Six of seven patients with Rocky Mountain spotted fever experienced rapid recoveries after treatment with terramycin. One patient failed to show improvement presumably because of his failure to attain a therapeutic blood concentration after oral administration.

See also absts. **338** (*Brucella* bacteriophage); **514** (sandfly fever in the U.S.S.R.); **608** (congenital malformations in relation to virus infections during pregnancy); **630** (report, U.S.A.).

IMMUNITY

SEN, M. R. (1951.) **Rupture of liver in horses during hyperimmunization.**—*Indian vet. J.* **27.** 258-261. 434

Amyloid degeneration resulting from repeated inoculation of toxins or bacterial suspensions during hyperimmunization seems to produce rupture of the liver and subsequent death in about 40% of serum horses, but this was absent in horses used for production of anti-tetanus serum.—B. K. KATHURIA.

MILLOT, P. & GORIUS, J. (1950.) Considérations sur la physiopathologie de l'ictère hémolytique du muleton—Rôle de l'allaitement. Importance du colostrum. **[Colostrum in haemolytic jaundice of mule foals.]**—*Rev. Path. comp.* **50.** 85-105. [English and Spanish summaries.] 435

The authors report several observations on a series of about 40 cases. They state that the affected foals are always healthy at birth and symptoms are not manifest until after sucking; this confirms the view that the antibody is transferred in the colostrum and not transplacentally. This is supported by the observation that the Coombs test never becomes positive until after sucking. The serological findings are given in three tables. The more severely affected cases were associated with high titres of antibody in the mare's serum and milk; prozones, possibly due to incomplete antibody, were common, and haemolysis *in vitro* could usually be demonstrated. Lower titres, and absence of haemolysis and prozones, were associated with the less severely affected. The titre of antibody in the colostrum was very high in one case studied, though it quickly fell as colostrum was replaced by milk.

The authors discuss at some length the observations of other workers favouring colostrum and milk as means of transport of antibodies from mare to foal. They believe that the foal can absorb ingested antibody for several weeks after birth but that the lower titre of antibodies in milk compared with colostrum reduces the danger after the first few days. Evidence is cited supporting the view that the udder can concentrate and even modify serum constituents while building up colostrum. It is concluded that rational treatment is to feed the foals of immunized mares on milk other than maternal until such time as the antibody titre in the maternal milk has fallen to a safe level.

—G. FULTON ROBERTS.

LEMÉTAYER, E., NICOL, L., GIROUD, O., CORVAZIER, R. & CHEYROUX, M. (1950.) Le colostrum et le lait dans leurs rapports avec l'immunité du jeune. **[Colostrum, milk and immunity in young animals.]**—*Lait.* **30.** 359-373. 474-496. 436

The foals of mares immunized against tetanus or diphtheria possess at birth a low but not negligible degree of immunity. Ingestion of 20 ml. colostrum, however, causes an appreciable rise in the immunity level of the foal's serum, which reaches a maximum about the third or fourth hour of life. The antibody titre of the colostrum before parturition is greater than that of the serum but about the time of parturition there is a fall, as the colostrum is replaced by milk. The immunity of the foal is maintained during 30–55 days after birth; although the antibody value of the milk is comparatively low, the foal is able to take 6–8 l. daily. The literature is discussed.

—W. E. ELLIS.

See also absts. **306** (anthrax); **315** (B.C.G.); **327** (fowl cholera vaccine); **337** (paradoxical agglutination in brucellosis); **339** (Strain 19); **340** (brucellosis); **343** (*Brucella* allergens); **346** (*Brucella* "native antigens"); **384-386** (F. & M. disease); **392** (rabies); **395** (fowl pox); **397** (influenza); **402-403** (swine fever); **404** (interference phenomenon between swine erysipelas and Teschen disease); **415-417** (Newcastle disease); **425** (virus diseases); **430** (Q fever); **474** (anti-nematode antibodies from ewe's colostrum).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

SEN GUPTA, C. M., BALARAMA MENON, P. & BASU, B. C. (1951.) **Studies on myiasis and its treatment.**—*Indian vet. J.* **27.** 341-350. 437

A note on myiasis in India, the species concerned being *Calliphora, Chrysomyia, Lucilia* and *Sarcophaga*. D.D.T. and benzene hexachloride were used: some details of results are given.—B. N. SONI.

STONES, L. C. (1951.) **A comparative method for testing agents used in sheep maggot fly control.**—*Bull ent. Res.* **41.** 503-521. [Abst. from author's summary.] 438

The "anti-adult" test involves the weekly exposure of treated groups of sheep to an active and dense fly population, maintained in a closed chamber under controlled conditions of temperature and light. The larvicide test is a modification of larval implantation, and is applied to the sheep when the "anti-adult" protection, indicated by the previous test, is found to have failed.

A dip containing 0·5% D.D.T. in water

suspension gave the best protection, purely by its action against the adult fly. A 0·5% D.D.T. benzene emulsion dip was less satisfactory, as also was spraying as a method of application. Spraying gave about half the protection of dipping; on sheep in full fleece, the application of ½ gal. of spray was inadequate. Protection was poor when the fleece was dressed with ½ lb. of dry powder containing 5% D.D.T.

B.H.C. and arsenic possessed virtually no "anti-adult" properties at the concentrations tested. They were both efficient larvicides and provided a valuable degree of protection against the sheep maggot fly as an incidental effect, when they were tested at the concentrations normally used for their primary function of sheep scab control.

CARTA, A. (1947.) Duodenite nodo-fistolosa da estri nel cavallo (2° e 3° stadio larvale di *Gastrophilus meridionalis*). **[Duodenal nodules in horses caused by larvae of** *Gastrophilus meridionalis***.]**—*Atti. Soc. ital. Sci. vet.* **1.** 309-319. [English and French summaries.] 439

C. described three cases of intestinal myiasis in Sardinian horses caused by second and third stage larvae of *Gastrophilus meridionalis*.

The macroscopic and microscopic finding is characterized by the presence of fibrous nodules in the duodenal ampulla in which the second-stage larvae produce a series of fistulous tracks: these are abandoned as soon as the second moult is completed and the third-stage larva fixes itself on the duodenal mucosa.

—B. BALDELLI.

BOUVIER, G. (1945.) Quelques questions d'entomologie vétérinaire et lutte contre certains arthropodes en Afrique tropicale. **[Some veterinary entomological questions and control of some arthropods in tropical Africa.]**—*Acta trop.* **2.** 42-59. [In French. English and German summaries.] 440

General comment: no new material.

GASCHEN, H. (1945.) Les glossines de l'Afrique Occidentale française. **[Tsetse flies of French West Africa.]**—*Acta trop.* Suppl. No. 2. pp. 127. 441

An account of observations made in French West Africa. There are chapters on history, morphology and anatomy, classification, special descriptions of the different species, biology, control and technique. There are many good illustrations and there is an extensive bibliography.

POTTS, W. H. (1950.) **A review of the game-destruction experiment, Shinyanga, 1945-1950.**—*Bur. interafr. Tsetse.* [B.P.I.T.T. publ. No. 137.] pp. 6. Appendices I-IV. 442

Following the destruction of 8,294 head of large game in an area of 700 sq. miles over a period of five years, *Glossina morsitans* and *G. swynnertoni* were eliminated. No definite conclusion was reached regarding *G. pallidipes*.

—JAS. G. O'SULLIVAN.

ROUBAUD, E. (1950.) Influence favorisante des infections trypanosomiennes sur le résistance biologique et la longévité des mouches tsétsés. **[Trypanosomiases and tsetse flies.]**—*C.R. Acad. Sci., Paris.* **230.** 157-159. 443

Glossina infected naturally or artificially with trypanosomes, lived longer than uninfected flies, in spite of the upset caused to their digestive mechanism. The association would seem to be one of symbiosis.

—JAS. G. O'SULLIVAN.

YUTUC, L. M. (1949.) **Observations on the prevalence of tabanid flies and surra-transmission experiments.**—*Philipp. J. Sci.* **78.** 379-388. [Author's summary modified.] 444

Observations on the monthly prevalence of tabanid flies were made. During a period of a little over three years, 854 flies were caught, of which 480 were *Tabanus striatus* and 374 *T. reducens*. The male–female ratio of the former was 1:7·4, of the latter, 1:25·7. A large number of males were collected during February and March. The peak of fly-incidence occurred in October or two months after the heaviest rainfall in August. A sub-peak was noted in February following an increase in the rainfall during December.

Positive results were obtained in experiments on surra transmission using *T. reducens* and *T. striatus*. *T. reducens* appeared to be a more efficient vector than *T. striatus*, owing probably to its larger size.

MORNET, P. & MAHOU, R. (1949.) La démodécie chez les bovins de l'Ouest Africain. **[Demodectic mange in cattle in West Africa.]**—*Bull. Acad. vét. Fr.* **22.** 87-92. 445

An outbreak in ten animals is described and the author incriminates a "tick bird" (*Buphagus africanus*) in the spread of the mange.—JAS. G. O'SULLIVAN.

MURRAY, M. D. (1951.) **The tropical fowl mite** *Liponyssus bursa* **infesting man in New Zealand.**—*N.Z. med. J.* **50.** 392-393. 446

L. bursa is reported for the first time from New Zealand. The source of the infestation of human beings was considered to be starlings'

nests in the roof, as mites were found on clean linen placed in a drying cupboard. Spraying with B.H.C. gave good control.

—L. K. WHITTEN.

GRAHAM, N. P. H. (1950.) **Modern trends in dipping practice.**—*Yearb. Inst. Insp. Stk., N.S.W.*, 1950. pp. 59, 63, 65, 67, 69. 447

There are notes on the efficiency and uses of the newer insecticides. Formulations and methods of application are discussed with special reference to loss of concentration in the dipping bath and spray due to "stripping" caused by absorption of particles of insecticide by the wool fibre of sheep. Methods are discussed for maintaining the concentration by "reinforcement" (addition of concentrate) and "replenishment" (addition of fluid containing the insecticide at the usual concentration). The problem of post-dipping lameness, and other bacterial infections is discussed. Addition of copper sulphate combats *Erysipelothrix* but not other infections.—H. McL. GORDON.

DU TOIT, R. (1951.) **Can dipping of livestock be replaced by spraying?**—*Fmg S. Afr.* **26.** 269-272. 448

Details are given of the spraying of cattle with dip-wash whereby they are saturated. It is speedier and less injurious to cattle than plunge-dipping. The method is still in the experimental stage.—JAS. G. O'SULLIVAN.

STICKEL, L. F. (1951.) **Wood mouse and box turtle populations in an area treated annually with D.D.T. for five years.**—*J. Wildl. Mng.* **15.** 161-164. [Author's summary slightly modified.] 449

A 117-acre area of dense woodland received an aerial application of D.D.T. in oil at the rate of 2 pounds per acre annually for five years. D.D.T. reached ground level in a much smaller amount (thousandths to hundredths of a pound per acre), as most of the material was retained on the foliage. Treatment was made during the first week of June of each year from 1945 through 1949.

Field studies of the wood mouse population in D.D.T. and check areas showed no significant differences before and after the 1949 D.D.T. treatment. There was no significant difference between trapping samples taken in D.D.T. and check areas in 1945 and those taken in 1949.

Field studies of the box turtles [a species of North American land turtle, *Cistudo carolina*] in D.D.T. and check areas in 1945 and 1949 showed no significant difference in population size. Growth of the four young turtles taken in the D.D.T. area in both 1945 and 1949 appeared to be normal in comparison with growth of check area turtles.

ROBBINS, C. S., SPRINGER, P. F. & WEBSTER, C. G. (1951.) **Effects of five-year D.D.T. application on breeding bird population.**—*J. Wildl. Mng.* **15.** 213-216. [Author's summary slightly modified.] 450

Aerial applications of D.D.T. in oil at the rate of 2 pounds per acre applied over a four-year interval on bottomland forest resulted in a 26% decrease in the breeding bird population by the fifth spring. The American redstart, parula warbler, and red-eyed vireo suffered deceases of 44%, 40%, and 28%, respectively, over the four-year period. Only the redstart decreased significantly immediately following application of the spray; a few days after the first, second, and fifth annual sprayings an average of 23% of redstart territories were deserted. No significant decrease was observed for other species, either immediately following spraying, or over the four-year period.

See also absts. **432** (murine typhus agent from ticks); **470** (*Culicoides nubeculosus*); **632** (book, parasitology).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

KREIS, H. A. (1944.) Die Rolle der parasitischen Würmer in den Tropen. **[Helminth parasites in the tropics.]**—*Acta trop.* **1.** 231. 451

A general article.

ANON. (1951.) **Worms in sheep, goats and cattle.**—*Fmg. S. Afr.* **26.** 149-155 & 160. 452

A general note.—G. B. S. HEATH.

CHEATUM, E. L. (1951.) **Disease in relation to winter mortality of deer in New York.**—*J. Wildl. Mng.* **15.** 216-220. [Authors' summary copied *verbatim*.] 453

Results from a study of lungworm, liver fluke and nose bot infestations of white-tailed deer show a positive correlation between incidence and intensity of infestations by these parasites and the death of deer from 'winter-kill'. A pronounced relationship assumed to be of a causative nature was found between infestation by the deer lung-worm (*Leptostrongylus alpenae*) and the pneumonias so frequently found in deer dying during severe winters.

Malnutrition of both qualitative and quantitative character is considered the basic

factor predisposing to death. The parasite load accompanied by their characteristic lesions and debilitating effects apparently reduces the chance of deer survival in severe winter. Lack of adequate shelter in some localities with consequent chilling was indicated to be of perhaps as much importance in precipitating death as inadequate food. This was found especially in the case of fawns and old animals.

HARTING, W. B. (1950.) **Mortality in adult cattle due to paramphistomes.**—*Yearb. Inst. Insp. Stk., N.S.W.*, 1950. pp. 87-89. **454**

Affected cows lost weight, milk production declined and they were dull and weak with persistent, foetid diarrhoea, often watery and discoloured from intestinal haemorrhage. More chronic cases were anaemic and had oedema of the submaxillary space. P.M. examinations revealed massive infestations throughout the abomasum, and the small and large intestines, with immature paramphistomes about 1 mm. long. There was marked inflammation and pitting of the mucosa where the flukes were attached. Treatment with 4 ml. carbon tetrachloride was unsuccessful.—H. McL. GORDON.

STEPHENSON, W. (1947.) **Physiological and histochemical observations on the adult liver fluke, *Fasciola hepatica* L. I. Survival *in vitro*. II. Feeding. III. Egg-shell formation. IV. The excretory system.**—*Parasitology*. **38**. 116-122, 123-127, 128-129 & 140-144. **455**

I. The best solution for survival was a mixture of borates and sodium, potassium and calcium chlorides. Monosaccharides increased survival time and they entered mainly through the body surface. The optimal pH was 8·2–8·6 and the best temperature 36°C. Carbon tetrachloride was non-toxic *in vitro*.

II. Blood is the main food and haematin is concentrated in the gut of the fluke. Living flukes were fed on clotted sheep blood and observations recorded. The intestinal epithelium is responsible for extracellular digestion and absorption.

III. The egg shell is composed of sclerotin, derived from globules in the vitelline cells. The discharge of globules is correlated with the presence of spermatozoa in the uterus. Mehli's gland does not contribute to the material of the egg shell.

IV. Fat globules devoid of cholesterol, were found in the excretory system. Reduced ascorbic acid was present mainly in the smaller vessels and in the sub-muscular layer of the body wall. There was no evidence of flame-cells in the adult fluke.—JAS. G. O'SULLIVAN.

PELLEGRINI, D. (1949.) Il "Cysticercus dromedarii" (Pellegrini, 1945) del cammello e del bovino e relativa "Taenia hyaenea" (Baer, 1927) della iena. [*Cysticercus dromedarii* **and** *Taenia hyaenea*.]—*Atti Soc. ital. Sci. vet.* **3**. pp. 596-603. [English and French summaries.] **456**

P. described *Cysticercus dromedarii* as a frequent parasite of camels and of cattle in Somalia and gave an account of its localization in the various organs of infested animals, its life cycle and pathogenic role. Instructions were given for its detection at meat inspection. P. confirmed experimentally that the adult worm is *Taenia hyaenea*.—L. BADIALI.

BECKER, B. J. P. & JACOBSON, S. (1951.) **Infestation of the human brain with *Coenurus cerebralis*. A report of three cases.**—*Lancet*. **261**. 198-202. **457**

The authors described the history, diagnosis and treatment of three cases of *Coenurus cerebralis* infestation of the brain in human beings in South Africa. All three patients had lived amongst sheep and dogs for a considerable time. In two cases the hydatid complement-fixation test gave positive results, although there was no evidence of the presence of an echinococcus.—M. L. CLARKE.

I. HEDIGER, H. (1950.) Das Okapi als ein Problem der Tiergartenbiologie. [**The okapi, a problem animal in zoological gardens.**]—*Acta trop., Basel*. **7**. 98-109. [English and French summaries. English summary slightly modified.] **458**

II. SCHEIDEGGER, S. (1950.) Pathologisch-anatomische Untersuchung des Okapi "Bambe". Beitrag zur Frage der Leberveränderungen infolge Helminthiasis. [**Pathological-anatomical examination of the okapi "Bambe".**]—*Ibid*. 133-150. [English and French summaries. Abst. from English summary.] **459**

III. KREIS, H. A. (1950.) Die Diagnose des Nematodenbefalles beim lebenden Tier, mit besonderer Berücksichtigung der Befunde beim Okapi "Bambe". [**Diagnosis of nematode infestation of live animals, with special reference to the okapi "Bambe".**]—*Ibid*. 151-163. [English and French summaries. Abst. from English summary.] **460**

IV. BAER, J. G. (1950.) Étude critique des helminthes parasites de l'okapi. [**The helminth parasites of the okapi.**]—*Ibid*. 164-186. [In French. English summary slightly modified.] **461**

I. The okapi is a very suitable animal to demonstrate how the biology of zoological gardens is a science compounded of many disciplines—zoology, ecology, bionomics, parasitology, veterinary science, botany and so on. Very few detailed P.M. examinations of okapis in captivity have been published up till now and for this reason the okapi which died at the Basle Zoo was examined with particular care. As a result of this detailed examination and arising from the subsequent discussion, the following principles are stated for future guidance: (1) Botanical determination and pharmacological analysis of the food-plants. (2) Establishment on suitable substitute foodstuffs soon after capture. (3) Research into the comparative parasitology of wild okapis and of all stages after capture, both qualitatively and quantitively; need for quarantine before despatch. (4) Detailed P.M. examinations of all dead okapis. (5) Experiments on vermifuges. (6) Thorough disinfection of travelling boxes in which okapi are placed, the interval to be as short as possible. (7) Maintenance in pairs in zoological gardens instead of as single individuals.

II. The P.M. examination of the okapi "Bambe" revealed a serious general helminthiasis as the principal cause of death. Parasites were found in great number in the stomach, the colon, and the liver.

There was fatty degeneration of the parenchymatous organs. There was extensive proliferation of the epithelium of the liver similar to pre-neoplastic changes.

III. On examining the faeces of the okapi, using the method described by Telemann, the following species of nematodes were found: *Strongyloides papillosus, Trichuris ovis, Capillaria longipes, Oesophagostomum sp., Haemonchus contortus, Trichostrongylus sp., Cooperia sp., Ostertagia sp.*, larvae of *Protostrongylus sp.*, larvae of *Muellerius capillaris*, and embryonated lungworm ova.

On the basis of published literature about nematodes of the okapi and from comparison with other ruminants, an attempt was made to identify the eggs of Strongyloidea and to systematize them. From the finding of the eggs of *Trichuris, Capillaria* and *Strongyloides* it was presumed that the species concerned were *Oesophagostomum okapi* Leiper, 1935; *Monodontella giraffae* Yorke and Maplestone, 1926; *Okapistrongylus epuluensis* Van den Berghe, 1937; *Haemonchus contortus* Rudolphi, 1803; *Impalaia okapiae* Van den Berghe, 1937; *Ostertagia okapiae* Van den Berghe, 1937; *Cooperia okapi* Leiper, 1935; *Protostrongylus sp.*

IV. Up to date, twenty-five species of helminths have been reported from the okapi. They include two species of flukes, two tapeworms and 21 species of roundworms. On the basis of the original material, it has been possible to reduce this number to 18.

It also appears that one genus and 11 species of roundworms occur only in the okapi, and that they are related to genera and species previously described from other ruminants. From a pathological standpoint, *Monodontella giraffae* a parasite of the bile ducts causes the most extensive and serious damage to the host.

GALLIARD, H. (1951.) Recherches sur l'infestation expérimentale à *Strongyloides stercoralis* au Tonkin. [*Strongyloides stercoralis* **infection in dogs.**]—*Ann. Parasit. hum. comp.* **26.** 67-84 & 201-227. 462

Human strains of *S. stercoralis* had varying infectivity for dogs; canine strains conferred no premunity against human strains and *vice versa*. Previous inoculation did not produce premunity and the virulence of larvae from inoculated dogs was not reduced.

—JAS. G. O'SULLIVAN.

ALLENSPACH, V. (1950.) Die Trichinose in der Schweiz. [*Trichinella* **infection in Switzerland.**]—*Schweiz. Arch. Tierheilk.* **92.** 134-136. 463

Trichinosis is only sporadic in Switzerland and indigenous pigs are rarely infested. A high proportion of mink, however, carry *Trichinella*. The disease is discussed from the meat inpection aspect.—M. L. CLARKE.

GAASE, A. (1949.) Der immunbiologische Nachweis der Trichinose bei Mensch und Tier. [**Immunobiological tests in human and animal trichinosis.**]—*Z. Hyg. InfektKr.* **129.** 570-576. Abst. in *Berl. Münch. tierärztl. Wschr.* No. 3. pp. 53-54. (1950.) 464

The complement-fixation test is superior to the precipitin test for the diagnosis of trichinosis, and a better antigen is prepared from trichinosed pig muscle than from rat muscle. It is stated that the test is of importance in veterinary medicine.—M. L. CLARKE.

FOURIE, P. J. J. (1951.) Letsels van Oesophagostomum columbianum (Knoppieswurm) in die blesbok [Damaliscus albifrons (Burch)]. [*Oesophagostomum columbianum* **in blesbok** (*Damaliscus albifrons*).]—*J. S. Afr. vet. med. Ass.* **22.** 63-65. [English summary modified.] 465

Lesions of oesophagostomiasis are des-

cribed in the blesbok, *Damaliscus albifrons*. Infestation apparently took place from sheep running on the same veld.

WEHR, E. E. (1948.) **A cropworm, *Capillaria contorta*, the cause of death in turkeys.**—*Proc. helminth. Soc., Wash.* **15.** 80. 466

An outbreak of disease involving more than 25 turkeys in a small flock in Virginia and resulting from the presence of large numbers of *C. contorta* in the crop and oesophagus was described.—L. G. DONALD.

HART, B. (1951.) **Recovery of the nematode *Ascaris vitulorum* Goeze 1782 from the faeces of a calf.**—*Aust. vet. J.* **27.** 208. [Author's summary slightly modified.] 467

The recovery of mature specimens of *A. vitulorum* is reported for the first time in Australia. The ascarids are described and the history of a clinical case of ascariasis in a calf is given.

SPINDLER, L. A. (1950.) **Effect of parasites on swine production.**—*Proc. 54th Ann. Meeting, U.S. Livestock sanit. Ass.* (1950.) pp. 241-246. 468

Ascariasis, strongyloidosis and stephanuriasis were discussed. *Ascaris* besides being pathogenic in its migratory phase, produced slowing down of growth at the time when the mature worms were in the intestine. Icterus from blockage of the main bile duct by *Ascaris* accounted for 8% of carcase condemnations in one year.—JAS. G. O'SULLIVAN.

INAGAWA, Y. (1948.) **One case of parasitic encephalomalacia in the horse observed in Hokkaido.**—*J. Jap. vet. Sci.* **10.** 61-66. 469

Invasion by larvae of species of *Setaria* into the brain and spinal cord of horses occurs in the Kyushu and Honshu districts of Japan. The author described a localized lesion in a horse and the accompanying illness. This horse was bred in Hokkaido, and the main clinical symptoms before death were motor disturbances and paralysis. The author reported that he had examined the preserved brains of 70 horses, material collected for 30 years or more, without finding any lesions caused by *Setaria*.

—KOGI SAITO.

MOIGNOUX, J.-B. (1951.) Culicoïdes nubeculosis Meig (Diptère cercitopogonide), hôte intermédiaire possible de la filaire Onchocerca reticulata Dies en Carmargne. [***Culicoides nubeculosus*, a possible intermediate host of *Onchocerca reticulata*.**]—*C.R. Acad. Sci., Paris.* **233.** 102-103. 470

Since *O. reticulata* is probably synonymous with *O. cervicalis*, M. has corroborated the conclusion of Steward that *C. nubeculosus* is the intermediate host. Details are given of microfilarial development.

—JAS. G. O'SULLIVAN.

GOPALAKRISHNAN, V. R. (1948.) **Stephanofilariasis among buffaloes in Assam.**—*Indian J. vet. Sci.* **18.** 227-231. 471

Adult worms and microfilariae indistinguishable from *Stephanofilaria assamensis* have been incriminated as the cause of an epizootic of ulcers around the external meatus of the ear and adjacent skin in buffaloes in Assam. Symptoms, epidemiology, control measures and treatment are described. The condition responds well to tartar emetic.—T. P. BANERJI.

INNES, J. R. M. (1951.) **Necrotising encephalomyelitis (or encephalomyelomalacia) of unknown aetiology in goats in Ceylon with similarities to setarasis of sheep, horses, and goats in Japan. (Including a brief review of nervous diseases of goats.)**—*Brit. vet. J.* **107.** 187-203. 472

A disease of imported goats characterized by paralysis especially of the hindquarters has existed in Ceylon for some years.

A comparable disease has occurred in Japan and perhaps also in India and Persia.

The lesions in the spinal cord and brain are acute inflammation with myelin loss, a perivascular and focal cellular reaction of lymphocytes, mononuclears and eosinophiles and a microglial and astrocytic response: persisting axis cylinders show irregularly globose or elongated swellings the significance of which is unknown: inclusion bodies are not present. The aetiological agent was not determined in Ceylon. A comparable disease of goats, sheep and horses in Japan and Korea is considered to be due to damage done to the central nervous system by migrating nematodes, namely *Setaria digitata* [Yamagiwa & Shoho (1944) *Jap J. vet. Sci.* **6.** 413; Yamagiwa *et al* (1945) *Ibid.* **7.** 117]. The unusual type of lesion seen in the Ceylon material is similar to that described by the Japanese workers. It is suggested that the Ceylon disease may be caused by *Setaria digitata*.

The possibly important role of nematode larvae in the aetiology of obscure nervous disorders such as "Kumri" in horses is suggested.

—M.C.

HAWKING, F. & LAURIE, W. (1949.) **Action of hetrazan on filariasis and onchocerciasis.**—*Lancet.* **257.** 146-147. 473

Hetrazan [diethylcarbamazine] removed

the filarial stage of *Onchocerca* from the skin of human patients but did not kill the adult worms. It provoked violent allergic reactions in patients with onchocerciasis.

—Jas. G. O'Sullivan.

Filmer, D. B. & McClure, T. J. (1951.) **Absorption of anti-nematode antibodies from ewe's colostrum by the new-born lamb.** [Correspondence.]—*Nature, Lond.* **168.** 170. 474

Anti-nematode antibodies were found to be present in the serum of a one-month old worm-free lamb. A small experiment was made to determine whether such antibodies could be detected in the colostrum of worm infested ewes and whether lambs acquired such antibodies by ingesting colostrum. Haemolytic complement-fixation tests were made of colostrum and of a series of samples of serum using an antigen prepared from *Cooperia curticei* and *Strongyloides papillosus*. The results indicated that antibodies are present in high titre in the colostrum and can be transmitted to the lamb.

—M.C.

Schmidt, J., Mendheim, H. & Hannak, J. (1950.) Epidemiologische Untersuchungen über die Verbreitung von Wurmeiern in Erziehungsanstalten. [**A method of determining distribution of helminth ova in schools and orphanages.**]—*Zbl. Bakt. I. (Orig.)* **156.** 156-160. 475

Samples of dust collected on adhesive cellophane tape from lavatories, dormitories etc. were examined for numbers of *Oxyuris* ova. The method developed for testing the dust samples is claimed to be an improvement on that of Schüffner & Swellengrebel (1943, 1944).

—Anita M. Mandl.

See also absts. **618** (identification of helminth eggs); **632** (book, parasitology).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

Ladd, R. L., Goldstein, M. T. & Burns, O. R. (1950.) **A study in transplanted rat and spontaneous dog tumors of growth accelerating and inhibiting factors from duojejunal tissue of hogs, sheep, and dogs.** —*Growth.* **14.** 155-166. 476

Extracts of small intestine tissue from dogs, sheep or pigs contained factors which definitely modified the growth rate of transplanted Jensen sarcoma in rats. Three dogs bearing tumours of different kinds were treated with extracts, and regression with degenerative changes took place in both primary and secondary lesions; all three dogs died.—E. Cotchin.

Bonser, G. M., Clayson, D. B. & Jull, J. W. (1951.) **An experimental inquiry into the cause of industrial bladder cancer.**—*Lancet.* **261.** 286-288. [Authors' summary copied *verbatim*.] 477

2-Amino-1-naphthol conjugates have been identified in the urine of dogs and other species after the administration of purified β-naphthylamine, a dye intermediate known to be a bladder carcinogen in man and dog. The approximate correlation between the amounts of the conjugates in the urine and the incidence of bladder tumours in different species provides a possible explanation of the observed differing species susceptibilities. 2-Amino-1-naphthol hydrochloride, when tested for local action on the bladder epithelium of the mouse, has been found to be a carcinogen of the same order of potency as 20-methylcholanthrene.

Dyer, H. M. [Biochemist, National Cancer Institute. National Institutes of Health.] (1949.) **An index of tumor chemotherapy. A tabulated compilation of data from the literature on clinical and experimental investigations.** pp. 329. Bethesda, Md.: Federal Security Agency, Public Health Service. **478**

This index will be an invaluable source of information for persons engaged in cancer research. It is compiled from the chief clinical and experimental investigations on treatment of tumours by chemical methods published in various countries, and is a comprehensive but not a critical survey.

There are four main sections consisting of: (1) A historical résumé and introduction; (2) Table of 5,031 chemotherapeutic tests; (3) An alphabetical index of the chemicals; and (4) A bibliography of 2,213 references. The data in section (2) are tabulated under the headings: agent, type of tumour, Species and number of animals used, dosage, number of treatments, route of administration, effect claimed, and a reference to the bibliography. The index is issued free, but its distribution is limited. It has been supplied to medical schools and scientific libraries in the U.S.A., Canada and other countries.—C.M.S.

Bessis, M. & Freixa, P. (1950.) Action de deux antagonistes de l'acide folique sur la leucémie des poules. **[Action of two folic acid antagonists on avian leucosis.]**—*C.R. Soc. Biol. Paris.* **144.** 885-887. **479**

Doses of 4-amino-pteroyl-glutamic acid (aminopterine) at 1/3 mg. per kg. body weight or of 4-amino-N-methyl folic acid (a-methopterine) at 3 mg. per kg.—two antagonists of folic acid were stated to prevent avian leucosis.
—Charlotte M. Wood.

Florijn, E. & Smits, G. (1949.) **Mechanism of the action of urethane in the treatment of malignant growth.** [Correspondence.]—*Nature, Lond.* **164.** 699. **480**

A theoretical basis is given for the authors' belief that the effect of urethane on malignant cell proliferation can be explained by its effect on the respiratory enzyme system, and this is supported by an experiment showing the influence of urethane on the synthesis of aneurin pyrophosphate from added aneurin by blood, and by observations on the treatment of leucaemic patients with urethane.—E. Cotchin.

NUTRITIONAL AND METABOLIC DISORDERS

Lander, P. E. [M.A., D.Sc., F.R.I.C., I.A.S. Late Agricultural Chemist to Government, Punjab.] (1949.) **The feeding of farm animals in India.** pp. xii + 492. Calcutta, Bombay, Madras, London: Macmillan & Co. Ltd. 25s. **481**

As a work of reference this manual should be of value to those interested in animal husbandry not only in India but also in other tropical countries. The lists of feeding stuffs and of harmful foods and famine fodders with discussion and information about each and the special chapters devoted to the feeding of each class of livestock, including camels, should be particularly useful. Sections devoted to general information leave something to be desired; for instance, in the chapter on physiology of digestion, bacterial digestion in the rumen is quite insufficiently stressed and information about the B vitamins is not up to date. The illustrations and material relating to Indian practices are of interest to the general reader.
—R. Marshall.

Ferrando, R. (1949.) Symbioses digestives et alimentation des ruminants. **[Digestive and nutritional symbiosis in ruminants.]**—*Rev. Méd. vét., Lyon et Toulouse.* **100.** 183-193. **482**

The slow passage of ingested material through the digestive tract of the ruminant and the maintenance of stable conditions of temperature and pH in the rumen are ideal for the development of a great variety of symbiotic bacteria and protozoa. The composition of the diet of the host has a marked effect upon the numbers and nature of these organisms. The importance to the ruminant is stressed of their action in digesting cellulose, in synthesizing vitamins, particularly those of the B group, and in synthesizing amino acids from diets in which certain essential amino acids may be absent, or from urea added to a natural diet.
—R. Marshall.

Gall, L. S., Thomas, W. E., Loosli, J. K. & Huhtanen, C. N. (1951.) **The effect of purified diets upon rumen flora.**—*J. Nutrit.* **44.** 113-122. [Authors' summary modified.] **483**

Sheep fed three different purified rations, containing urea-plus-sulphur, urea-without-sulphur or casein, gave different physical responses as shown by their different growth rates, and also supported different rumen flora.

A lowered bacterial population was found in the sheep fed the urea-without-sulphur ration when compared with animals fed the urea-plus-sulphur or casein rations. These sheep supported a rumen bacterial population consisting almost entirely of facultative anaerobes.

Different physiological types of bacteria were found in the rumen of animals fed casein than in animals fed the other purified rations. The rumen bacterial picture of the sheep fed purified diets was more like that seen in calves than in adults fed normal rations of hay and grain.

Cullity, M. & Miller, I. (1950.) **The influence of grazing green oats on the butterfat content of milk.**—*J. Agric. W. Aust.* **27.** 394-407. **484**

The grazing of cows on young green oats without supplementary roughage had no effect on the butterfat content of milk. The results are discussed in the light of observations to the contrary by other workers.—R. Reid.

Kennedy, G. C. (1950.) **The hypothalamic control of food intake in rats.**—*Proc. roy. Soc.* Ser. B. **137.** 535-549. [Summary copied *verbatim.*] **485**

The effect on feeding behaviour in the rat of permanent electrolytic lesions in the hypo-

thalamus which causes obesity, has been studied. Soon after operation, the animals were extremely voracious. As the obesity became established, the voracity was reduced in degree and finally disappeared. Young unoperated rats could not be made to exhibit such voracity even after starvation. The young unoperated animals showed little discrimination against unattractive diets. When fed on meal mixed with an equal weight of kaolin, they obtained a normal nutrient intake, and maintained their weight by doubling the bulk eaten. In the voracious stage, operated animals adapted in this way more quickly than normal; in the obese stage they adapted more slowly and only after loss of considerable body fat. Older unoperated animals, which were moderately obese, resembled the operated ones in their feeding reactions.

It is suggested that the effect of hypothalamic damage is to emphasize two components of the urge to eat, a primitive voracious one, and a more discriminative component, either of which may be dominant according to the status of the fat stores. The simplicity of the young rats' reactions appears to be due to closer co-ordination of these components by the hypothalamus. Modification of the hypothalamic control of energy intake may be a prerequisite of obesity in general.

Reasons are advanced for regarding the hypothalamic mechanism as being sensitive to chemical changes in the blood.

BOND, K. I. (1951.) **Mineral nutrition of the dairy cow.**—*Vet. Rec.* **63.** 247-250. Discussion p. 250. 486

Figures for the requirements of calcium and phosphorus have not been universally accepted: it is generally agreed that more phosphorus is now considered necessary than formerly. Copper and iodine deficiencies were described, the administration of 120 mg. of potassium iodide daily being required to overcome the latter. Freely available complex mineral supplements were recommended.

—JOHN SEAMER.

GREEN, H. H. (1951.) **Copper and molybdenum in relation to diseases of cattle and sheep in Great Britain.**—*Proc. Spec. Conf. Agric., Aust.* 1949. pp. 293-299. London: H.M. Stationery Office. £1. [Author's summary copied *verbatim*.] 487

Hypocupraemic conditions in sheep and cattle in Britain are discussed, with particular reference to "swayback" in lambs, "pining" of calves, and "peat scours" of cows. Effects of excessive ingestion of molybdenum are considered, notably in relation to "teart" of cattle. No relationship is discerned between copper and molybdenum in diseases of ruminants and where hypocupraemia coincides with molybdenosis an unknown "conditioning factor" is predicated, operating irrespective of molybdenum content of pasture.

BENTLEY, O. G. & PHILLIPS, P. H. (1951.) **The effect of low manganese rations upon dairy cattle.**—*J. Dairy Sci.* **34.** 396-403. [Authors' summary and conclusions slightly modified.] 488

Experiments have been made with young Holstein heifers from calfhood (200 lb. live weight) through one, two or three lactations on rations composed of good legume hay low in manganese, maize silage and a grain mixture of maize and maize by-products.

Rations with less than 10 p.p.m. manganese were adequate for growth in young Holstein heifers. Addition of added manganese as a mineral supplement to provide 30, 40 or 60 p.p.m. did not favourably stimulate growth above that of the control or low manganese lot.

Heifers raised on the low manganese or control rations were slower to exhibit oestrus and were slightly and consistently slower to conceive upon breeding. Manganese has no appreciable effect on either the vitamin A, C or carotene content of the blood, hence the synthesis of vitamin C is not contingent upon the manganese content of the ration provided 7 to 10 p.p.m. of manganese are present in the ration. It was extremely difficult to affect the manganese concentrations of the organs and tissues of dairy cattle with the one exception of the ovary, which exhibited low manganese concentrations when the diet of the cattle contained only 7 to 10 p.p.m. of manganese in the ration. Low dietary manganese caused abnormal structural changes found in the livers of cattle subsisting thereon.

Cattle readily tolerate 60 to 70 p.p.m. of manganese in the diet. Twenty p.p.m. would seem to be a satisfactory level of manganese which provides a margin of safety to meet the requirements of cattle and 10 p.p.m. or less is distinctly in the marginal or deficient zone. Under practical conditions it would seem that the addition of supplemental manganese to cattle rations would be indicated where the manganese is below 20 p.p.m. in the ration.

ENDER, F. & TANANGER, I. W. (1946.) Fortsatte undersøkelser over årsaksforholdene ved mangelsykdommer hos storfe og sau. Koboltmangel som sykdomsårsak belyst ved

kjemiske undersøkelser av fôret. [**Continued investigations into deficiency diseases in cattle and sheep. Cobalt deficiency as a disease revealed by chemical examination of the foodstuffs.**]—*Norsk VetTidsskr.* **58.** 313-331, 353-405. [English summary.] **489**

Using a colorimetric test for the estimation of cobalt in hay, samples from farms where herds had pica contained only 0·027–0·080 mg. Co per kg. dry weight, but samples from farms where herds were healthy contained 0·075–0·25 mg. Deficiencies of copper and phosphorus might also be involved in the diseases, though low cobalt content of the hay was chiefly responsible, and cobalt additions to foodstuffs produced better results than did additions of copper and phosphorus. Herbage, seaweed and yeast are rich sources of cobalt, but cereals and straw poor.—F. R. Harris.

Davis, R. L. & Chow, B. F. (1951.) **Content of radioactive vitamin B_{12} in the feces of rats fed Co^{60} and aureomycin.**—*Proc. Soc. exp. Biol., N.Y.* **77.** 218-221. [Authors' summary copied *verbatim.*] **490**

By the incorporation of Co^{60} into the diet, it could be shown that aureomycin causes an increase in the activity, both radioactive and microbiological, of the vitamin B_{12} content of the feces. The fecal B_{12} content could be increased by increasing the amount of Co^{60} used. The experimental findings can be explained by the effect of the antibiotic on the intestinal bacterial flora.

Peschel, E., Black-Schaffer, B. & Schlayer, C. (1951.) **Potassium deficiency as cause of the so-called rheumatic heart lesions of the adaptation syndrome.**—*Endocrinology.* **48.** 399-407. [Authors' summary copied *verbatim.*] **491**

Myocardial necrosis was found in rats in which potassium depletion had been caused by low potassium diets together with DCA [desoxycorticosterone acetate] overdosage with or without high sodium intake.

Both the rapidity with which death occurred, and the number of deaths were inversely proportional to the potassium consumption.

Myocardial lesions and death did not occur if sufficient amounts of potassium had been added.

These findings do not support the view that the heart lesions found in DCA overdosed rats have any connection with rheumatic fever or the adaptation syndrome. The pathologic anatomic studies showed that the myocardial lesion is different from that of rheumatic fever and identical with that produced by potassium exclusion diets.

Garton, G. A. (1951.) **Observations on the distribution of inorganic phosphorus, soluble calcium and soluble magnesium in the stomach of the sheep.**—*J. exp. Biol.* **28.** 358-368. [Author's summary copied *verbatim.*] **492**

The inorganic phosphate, soluble calcium and soluble magnesium levels in the various divisions of the stomach of the sheep on different diets have been studied.

The concentration of inorganic phosphorus and soluble magnesium in ruminal and abomasal liquors was of the same order in these two divisions of the stomachs of three fistulated animals independent of the type of feed or time after feeding at which the samples were taken.

The concentration of inorganic phosphate, soluble calcium and magnesium in omasal liquor of slaughtered sheep was higher in all cases than the corresponding value for rumen liquor, lending support to the idea that one of the functions of the omasum is to absorb water.

Although the concentration of soluble calcium in omasal liquor was higher than that found in the corresponding ruminal liquor, much higher levels were formed in abomasal liquor than in omasal or ruminal liquors.

O'Moore, L. B. (1950.) **Observations on phosphorus deficiency in the grazing cow.**—*Irish Vet. J.* **4.** 198-209 & 218-227. **493**

Animals which had been grazing for some time on phosphorus deficient pastures had low blood inorganic phosphorus levels, some had clinical symptoms of 'bog lame' and some were anoestrus. Administration of extra phosphates or transferrence to phosphorus sufficient pasture restored the blood phosphorus and was beneficial in the cases of 'bog lame' and anoestrus.

—R. Marshall.

Ender, F., Helgobostad, A. & Bøhler, N. (1949.) Studier over eksperimentell rakitt og tetani hos rev. [**Experimental rachitis and tetany in (silver) foxes.**]—*Nord. vet.* **1.** 827-894. [Abst. from English summary.] **494**

Rickets has been produced in fox cubs fed diets poor in calcium or phosphorus, and by other means. A blood Ca level of 6–7 mg. % is associated with constant nervousness. On the P deficient diet there were no nervous symptoms, but sudden changes in diet associated with increased blood P may cause tetany. Discussion of the importance of absorption factors and details of X-ray and P.M. examinations are given.—H. Boyd.

BAIR, G. (1951.) **Chronic vitamin A poisoning.** —*J. Amer. med. Ass.* **146.** 1573-1574. [Author's summary slightly modified.] **495**

A case of hypervitaminosis A [in a baby] with the typical findings and an unusual cranial bone involvement is presented. Because of the dangers of overdosage, caution is advised in the administration of vitamin A as a standard procedure in the feeding of healthy infants. The prognosis in recognized cases is excellent after stoppage of excess vitamin A.

BAUER, H. R. (1950.) Ferkelsterblichkeit und blindgeborene Ferkel infolge A-Avitaminose. **[Vitamin A deficiency in relation to mortality and blindness in piglets.]**—*Tierärztl. Umsch.* **5.** 366-368. **496**

Feeding with mill-refuse produced avitaminosis-A in the piglets of two litter-mate sows, the symptoms being weakness, early mortality, blindness and xerophthalmia. Feeding of the sows with plentiful vitamin A, calcium, and purified egg-white, and an optimum milk supply for the piglets, prevented mortality, and the piglets were well developed and healthy.

—F. R. HARRIS.

EDEN, E. & SELLERS, K. C. (1949.) **The absorption of vitamin A in ruminants and rats.**—*Biochem. J.* **44.** 264-267. **497**

When vitamin A was given *per os* to bullocks, sheep or rats, there was a rise in the vitamin A content of the systemic blood and also of the portal blood although this was no higher than the level in systemic blood; this observation contra-indicates absorption by the portal system. There was, however, an increase in vitamin A of the lymph and lymph tissue of the upper region of the small intestine, while no corresponding increase was observed in the body lymph. Thus, it appears that absorption of vitamin A, at least to a great extent, takes place *via* the lymphatic system.

—R. MARSHALL.

LOOSLI, J. K. (1949.) **Vitamin E requirement and economy in farm animals.**—*Ann. N.Y. Acad. Sci.* **52.** 243-250. **498**

L. discussed the symptoms of vitamin E deficiency in farm animals and studies made on vitamin E metabolism. Of the quantitative tocopherol requirements of farm animals little is known. A daily intake of 2·3 mg. total tocopherols per kg. body weight proved adequate for mature sheep; 2–5 mg. dl-α-tocopherol per kg. cured muscular dystrophy in lambs and the minimum requirement for prevention of this disease was estimated to be between 0·23–0·37 mg. tocopherols per kg. daily. A daily intake of 4 mg. per kg. as supplied by milk is well above the actual minimum requirement of dairy calves. The minimum requirement has not been established for any of these animals, but the values given above correspond with the known requirements for rabbits, fowls and ducks.

—E.M.J.

PARRISH, D. B. (1949.) **Vitamin E in the nutrition of farm animals.**—*Ann. N.Y. Acad. Sci.* **52.** 251-255. **499**

There are definite physiological needs for vitamin E by the common farm animals; reproductive ability of these species was not found to be dependent on the intake of the vitamin, but muscular disturbances and cardiac failure were reported when rations were deficient in it. The physiological utilization of dietary tocopherols, especally by dairy cattle, was discussed. Tocopherol concentrations in sera of cows and calves were higher than those of any other fat-soluble vitamins, the levels being about ten-fold higher than those usually found for vitamin A. The tocopherols play an important part in the nutrition of farm animals, but the identification of possible physiological functions is not yet clear.—E.M.J.

GULLICKSON, T. W. (1949.) **The relation of vitamin E to reproduction in dairy cattle.**—*Ann. N.Y. Acad. Sci.* **52.** 256-259. **500**

G. described a study using 36 cattle, males and females, fed a diet deficient in vitamin E. Breeding records indicated that reproducing ability was not adversely affected through three generations. Thirteen animals so fed died suddenly at ages ranging from 21 months to five years with no preliminary symptoms. Several collapsed while consuming their rations. It was significant that six of the cows had been pregnant 6–8 months at the time of death and three died within three days after calving. A critical vitamin E shortage in the later stages of pregnancy and parturition in cattle and rats was discussed.—E.M.J.

KOHLER, G. O. & GRAHAM, W. R., JR. (1951.) **A chick growth factor found in leafy green vegetation.**—*Poult. Sci.* **30.** 484-491. [Authors' summary slightly modified.] **501**

The press juice of forage crops contains a growth factor for chicks. The growth factor is not identical with vitamin B_{12}, whey factor, vitamin B_{13}, "antibiotic effect" or with other factors which may be supplied by fermentation, "animal protein factor", products.

The growth factor is destroyed by drying whole forage crops.

Stability and distribution of the growth factor are described.

The growth factor gives a growth response in commercial chicks fed a practical type ration.

JOHNSON, R. B. (1951.) **New methods of treating ketosis. A preliminary report.**—*N. Amer. Vet.* **32.** 327-332. **502**

In a search for a glucose precursor which could be given *per os* to cows with ketosis, without breakdown of the substance to fatty acids in the rumen, glycerin was found to be very effective in curing ketosis and caused no apparent digestive disturbances.

—R. MARSHALL.

SHAW, J. C. & HATZIOLOS, B. C. (1951.) **Further studies on the use of cortisone in the treatment of ketosis in dairy cattle.**—*J. Dairy Sci.* **34.** 498. [Only abst. given. Abst. slightly modified.] **503**

Thirteen cows with ketosis received 1,500 mg. of cortisone intramuscularly and had an increase in blood glucose from an average of 22·46 mg. % before treatment to 53·17 mg. % 24 hours after treatment. The high level of blood glucose was maintained for 2 or more days. All but two, which also had metritis, recovered without further treatment. The blood acetone bodies returned to normal more slowly over a period of several days. Five of the above cases were very resistant to glucose injections, three having received 14 bottles of glucose each with only slight improvement prior to the use of cortisone. The blood glucose returns to normal very rapidly and frequently rises above normal by the end of 24 hours. In the only short-time trials made, the blood glucose of two of the above cows increased from 20·3 and 17·6 to 46·4 and 43·2 mg. % respectively, within four hours after the injection of cortisone and another had an increase of from 23·2 to 37·3 mg. % within 30 min. Thereafter, the blood glucose increased gradually over a period of 24 hours or more. The combination of cortisone and glucose shows great promise. The appetite of the cow usually improves markedly within 24 hours or less. Other cases have been treated with somewhat smaller doses with fairly good results, except that the blood glucose response is less dramatic. Many cases have been found to be associated with metritis and have responded well to a combination of penicillin and cortisone. Such cases respond to cortisone alone but frequently have relapses.

ROBERTS, S. J. & DYE, J. A. (1951.) **The treatment of acetonemia in cattle by continuous intravenous injection of glucose.**—*Cornell vet.* **41.** 3-10. **504**

A technique for the continuous intravenous injection of glucose into cows, which gave satisfactory results in five cases was described. By this means the rapid decline in blood glucose levels following interrupted injections was overcome; 200 ml. of 40% glucose solution per hour maintained a normal blood level.

—JOHN SEAMER.

JARRETT, I. G. & POTTER, B. J. (1950.) **Metabolism of acetate and propionate in the ruminant.** [Correspondence.]—*Nature, Lond.* **166.** 515-517. **505**

Intravenous injection of acetate, propionate or a mixture of the two into sheep indicated that acetate gave rise to an increase in ketone bodies in the blood while propionate caused an increase in pyruvate, lactate and sugar.

—R. MARSHALL.

WATSON, C. J. (1951.) **Some recent studies of porphyrin metabolism and porphyria.**—*Lancet.* **260.** 539-542. **506**

W. discussed the existing knowledge and theories on the biosynthesis and clinical significance of the porphyrins in human medicine.

—JOHN SEAMER.

JARRETT, I. G. & POTTER, B. J. (1950.) **The metabolism of acetate in sheep after injection of phlorhizin** [a glucoside derived from the bark and root of apple, pear and cherry trees, etc.]—*Aust. J. exp. Biol. med. Sci.* **28.** 595-602. [Authors' summary copied *verbatim*.] **507**

The variation of the amount of sugar, nitrogen and ketone bodies excreted in the urine was determined after the administration of acetate to phlorhizinized sheep. The D/N [dextrose: nitrogen] ratio showed that little, if any, of the sugar excreted in the urine following acetate administration, could be attributed to a direct conversion of the acetate. Although it proved unlikely that acetate was glucogenic a marked ketogenic effect was observed.

VAN ASPEREN, K. (1951.) De stofwisseling van het 4-methyl 2-thiouracil na orale toediening bij jonge hanen. **[The metabolism of orally-administered 4-methyl 2-thiouracil in cockerels.]**—*Tijdschr. Diergeneesk.* **76.** 133-155. [English summary.] **508**

Half of the amount of methyl thiouracil is excreted within 24 hours after feeding. The rest is destroyed in the tissues. There is no cumulative effect.—C. A. VAN DORSSEN.

See also abstr. **545-549** (bracken poisoning); **568** (volatile fatty acid metabolism); **634** (bibliography of vitamin E).

DISEASES, GENERAL

I. Dalling, T. (1948.) **Diseases of animals.** —*J. R. agric. Soc.* **109.** pp. 13-33. **509**

II. Dalling, T. (1949.) **Diseases of animals.** —*Ibid.* **110.** pp. 184-198. **510**

III. Dalling, T. (1950.) **Diseases of animals.** —*Ibid.* **111.** pp. 187-204. **511**

I, II & III. Three annual reviews on the progress of research on problems of animal health. The reviews deal with diseases of cattle, sheep, pigs and poultry and miscellaneous problems connected with nutrition, poisoning, breeding, etc.—E. F. Lewis.

Frei, W. (1946.) Besonderheiten der Entstehung und Verbreitung tropischer Tierseuchen. **[Tropical diseases in animals.]**—*Acta trop.* **3.** 1-28. [In German. English and French summaries.] **512**

A general article.

Macrae, J. (1951.) **Human infectious diseases associated with animals.**—*Publ. Hlth, Lond.* **64.** 192-194. **513**

A general note detailing 21 conditions in which there is relationship between disease in man and in animals. A table shows the animals concerned with each of 47 conditions named. The 21 conditions are a special selection from those of the full list.

Carlé, R. (1951.) Das ökologische Mosaik der Infektketten bei einigen Seuchen in Südrussland (Tularämie, Pest, Malaria, Pappatacifieber.) **[Epidemiology of tularaemia, bubonic plague, malaria, and sandfly fever in the U.S.S.R.]**—*Z. Tropenmed. Parasit.* **2.** 558-602. [English summary.] **514**

A study of the epidemiology of tularaemia, bubonic plague, malaria and sandfly fever in South Russia, based on German work during 1940-43. Russian literature was referred to, a bibliography being given and said hitherto not to be known. Geography, climate and epizootic factors were discussed. Much attention was given to bionomics. *Arvicola terrestris* (a vole) was the main reservoir of tularaemia; the large number of potential hosts facilitates human infection at all seasons. The region of the Don river was stated to represent the largest enzootic area in Europe.

Sulkin, S. E. & Pike, R. M. (1951.) **Survey of laboratory-acquired infections.**—*Amer. J. publ. Hlth.* **41.** 769-781. **515**

A summary is presented in tabulated form of 1,342 cases in which infections were acquired as a result of laboratory work in the U.S.A. Of these 775 were bacterial infections, 265 viral, 200 rickettsial, 39 parasitic, and 63 fungal. The case-fatality rate was 3%. Brucellosis, TB., tularaemia, typhoid fever, and streptococcal infections were responsible for 72% of the bacterial infections and 31% of all infections. 1,015 of the infections occurred in scientific personnel, the remainder in students, animal caretakers, etc. The probable source of infection was indicated in all except 248 cases.—W. R. Bett.

Vines, H. W. C. [M.A., M.D. Professor of Pathology, University of London.] [Revised by.] (1949.) **Green's manual of pathology.** pp. viii + 1200. London: Baillière, Tindall & Cox. 17th Edit. 42s. **516**

This is a sound, well written and well illustrated textbook of human pathology, which has been revised and incorporates both new matter and new illustrations. This edition "continues to follow the general lines of its predecessors, the first part dealing with the principles of general pathology and the second with systematic pathology in relation to clinical medicine". The veterinary student usually likes to read a textbook of human pathology to supplement his specialized studies, and this will probably suit him as well as any of those currently available.—E. Cotchin.

Price, F. W. [F.R.S.Ed., M.D., C.M.Ed., F.R.C.P.Lond., Hon. M.D. Belf. Consulting Physician to the Royal Northern Hospital and to the National Hospital for Diseases of the Heart, London.] [Edited by.] (1950.) **A textbook of the practice of medicine.** pp. xlv + 2076. London: New York: Toronto: Geoffrey Cumberlege, Oxford University Press. 8th Edit. 45s. **517**

This well-known book on medicine, now in its eighth edition and thirty years old, continues to maintain its place. Twenty-nine distinguished contributors have shared in its production and as a whole it provides a most satisfying source of authentic information.

The book is divided into 20 sections, the main body systems each claiming one, the others dealing with such subjects as infectious diseases, diseases due to metazoa, diseases due to physical and chemical agents and diseases of metabolism.

As a ready source of information on diseases in general the book serves an admirable purpose. In such a book there is of course much that interests workers in comparative medicine; in particular the diseases common to animals and man are well covered.

The names of the authors of each subject or group of subjects are given throughout the text, a very satisfactory system for the reader.

The printing is clear and the quality of the paper adequate and the binding though light should last the life of the present edition.

McEntee, K., Hansel, W. & Olafson, P. (1951.) **The production of hyperkeratosis (X-disease) by feeding fractions of a processed concentrate.**—*Cornell Vet.* **41.** 237-239. [Authors' summary copied *verbatim.*] 518

Fractions of the processed concentrate previously reported to have produced hyperkeratosis experimentally [see *V.B.* **21.** 3327] were fed to calves. It was found that the ether extract of the concentrate and the free fatty acid fraction of the ether extract would produce the disease. The ether extract residue and the phenolic and neutral steroid fractions of the ether extract did not produce the disease.

Wagener, K. (1951.) **Hyperkeratosis of cattle in Germany.**—*J. Amer. vet. med. Ass.* **119.** 133-137. 519

A disease which seems to be identical with that described as X-disease or hyperkeratosis from various parts of the U.S.A. during the past few years occurred on ten farms in the Oldenburg district of Germany between 1946-48 with a loss of 153 head of cattle; no other species of farm animals were affected, but some of the farmers said that their cats became ill and died from a similar condition at the same time. The disease was worst during the winter; new cases ceased to occur in the summer when the cattle were at pasture, but when they were housed again in the following autumn new cases occurred.

Suspicion attached to the use of a certain wood preservative which had been used by all of the ten affected farms. All ten farms had used wood preservative from a load in one tank vehicle supplied by a firm. Cattle fed on hay which had been stored in a hay loft made of wood treated with the preservative also developed the disease. Experiments were made at Hanover Veterinary College to test the hypothesis that the wood preservative was the cause of the disease.

A cow was fed on hay brought from three of the affected farms and started to develop symptoms and lesions of the disease four weeks later.

The manufacturers of the preservative denied liability, stating that their wood preservative had been used for 20 years without any complaints.

Wooden huts at the College were treated with the preservative (a) from the tank vehicle load which had been used for the timber on the affected farms and (b) from a supply obtained from the manufacturers. Other similar wooden huts were not treated. Young cattle were housed in all three types of wooden huts. Those animals housed in the hut treated with preservative from the batch used by the farmers developed the disease. The poisoning ingredient of the preservative has not yet been identified chemically; it appears to maintain its noxious properties for several years.

[Recent reports from the U.S.A. record the first successful experimental cases of hyperkeratosis in that country as a result of feeding cattle on a certain proprietary concentrate food. (See 518 above and *V.B.* **21.** 3327]—M.C.

Mathams, R. H. & Sutherland, A. K. (1951.) **Siliceous renal calculi in cattle.**—*Aust. vet. J.* **27.** 68-69. 520

Calculi from the kidneys of four cows were collected at an abattoir and found to consist almost entirely of silicon dioxide. Such calculi appear to occur commonly in cattle from an area where pastures contained much "blady" grass (*Imperata cylindrica* var. *major*). The high content of silica in this grass may have some aetiological significance in this condition.

—D. C. Blood.

Clouet. (1951.) L'indication opératoire des réticulites traumatiques. **[Indications for operation in traumatic reticulitis.]**—*Rev. Méd. vét., Lyon et Toulouse.* **102.** 36-43. 521

The operaton is to be undertaken when the foreign body is likely to be capable of being removed, and before it has become encapsulated, or before a suppurative or generalized peritonitis or pericarditis or pleurisy have developed. The symptoms likely to be present in those cases that can be successfully operated upon are discussed, with particular attention to the temperature and pulse, and the nature of the reaction provoked by pinching the animal's back or by percussion, and it is suggested that in general the operation should be undertaken within a period of eight or at most ten days after the first onset of symptoms.—E. Cotchin.

Greig, J. R. (1951.) **The shepherd's guide to the prevention and control of the diseases of the sheep.** pp. 108. Edinburgh: H.M. Stationery Office. 3s. 522

Although this booklet is: "primarily intended for the guidance of the shepherd", veterinarians will find much to make its reading worthwhile.

A short section devoted to simple facts about hygiene, and about sera and vaccines is followed by 37 pages in which infectious diseases are discussed individually under the headings: "bacterial", "virus", and "rickettsial". In the next 10 pages, functional disorders and diseases of unknown origin are dealt with, before passing to 45 pages devoted to ecto- and endo-parasites. A glossary of technical terms is a very sensible inclusion.

When writing for the lay public, it is difficult to avoid sacrificing accuracy for clarity, but the compiler does appear to have avoided this mistake. The language is simple and, by avoiding all controversial matter, a reasonably balanced picture of present day knowledge about each disease is given. The booklet should achieve a large circulation among farmers.

—G. B. S. Heath.

Gray, F. V., Pilgrim, A. F. & Weller, R. A. (1951.) **Fermentation in the rumen of the sheep. I. The production of volatile fatty acids and methane during the fermentation of wheaten hay and lucerne hay *in vitro* by micro-organisms from the rumen.**—*J. exp. Biol.* **28.** 74-82. 523

Gray, F. V. & Pilgrim, A. F. (1951.) **Fermentation in the rumen of the sheep. II. The production and absorption of volatile fatty acids during the fermentation of wheaten hay and lucerne hay in the rumen.**—*Ibid.* 83-90. [Authors' summaries copied *verbatim.*] 524

I. When wheaten hay and lucerne hay were fermented by organisms from the rumen of the sheep it was necessary to employ a large inoculum of rumen fluid in order to reproduce the rumen fermentation *in vitro*. With a small inoculum the fermentation did not conform to the known characteristics of the natural process.

Products per kilogram of wheaten hay fermented *in vitro* were: fatty acids 200–250g.—acetic acid 41%, propionic acid 43% and butyric acid 16% (by weight); methane 15 l.

Products per kilogram of lucerne hay were: fatty acids 250–300g.—acetic acid 53%, propionic acid 29% and butyric acid 18% (by weight); methane 20 l.

The findings support the view that, owing to the more rapid absorption of propionic than of the other acids from the rumen, the proportion of this acid remaining in the rumen fluid is considerably less than the proportion actually formed in the fermentation.

II. Analyses of the rumen fluid of sheep fed on wheaten hay and on lucerne hay showed that characteristic changes take place in the composition of the mixture of volatile fatty acids in the rumen throughout the day.

The changes conform closely to those predicted from the composition of the mixture of the fatty acids produced from the same two fodders *in vitro*. They support the view that propionic acid is relatively more rapidly absorbed than either acetic or butyric acid, and that the fermentation of these fodders in the rumen produces a mixture of the acids in which propionic acid forms a larger proportion than it does in the rumen fluid.

Schwabacher, E. N. (1950.) **The use of an antihistamine drug in a case of tympany.**—*Vet. Rec.* **62.** 711-712. 525

A case of acute tympany in a Pekingese responded promptly to intramuscular injection of 1 ml., 0·05 g. phenergan. The gastric sphincter spasm, which may have been caused by the alimentary irritant action of an unknown antigen, was relieved by the antispasmodic action of phenergan.—Nesta Dean.

Honeker, A. (1950.) Die Krankheiten der Ziege. Heft 1. Krankheiten des Verdauungsapparates. **[Diseases of goats.]** pp. 128. Dortmund: H. Wellershaus. DM. 3.30. 526

This is the first of six small volumes dealing with the diseases of goats. The author is a retired veterinarian with a wide experience of the breeding of goats and of their diseases. The book is written for goat keepers, rather than for veterinarians. This volume deals with diseases of the digestive tract and there are two appendixes devoted to parasitic diseases and to disorders due to deficiency of vitamins and hormones. There are 58 black-and-white illustrations. There is no index. The price is remarkably low.

This is a useful book for goat keepers and will doubtless be widely read by subscribers to "Der Ziegenzüchter" (The Goat Breeder), the publishers of which have sponsored this book and published it. It does not meet the needs of veterinarians requiring a work of reference.

—E. G. White.

Bolle, W. (1949.) Betrachtungen zum Herztodproblem des Schweines. **[The problem of fatal syncope in pigs.]**—*Berl. Münch. tierärztl. Wschr.* No. 7. pp. 81-85 & No. 8. pp. 97-101. 527

The general circumstances of occurrence of fatal syncope in pigs suggest that it has a nutritional origin, and in this paper there is given an extended consideration of a possible physiological mode of pathogenesis of the disease, in which vitamin deficiency (with par-

ticular reference to vitamin B_1), mineral deficiency, carbohydrate excess, and disturbed thyroid and other endocrine activity, along with other factors, could be conjointly concerned. On this basis, suggestions are made for further clinical and experimental studies.—E. COTCHIN.

HARS, E. (1951.) **Oedema disease of swine.** [Correspondence.]—*Vet. Rec.* **63.** 408. **528**

Oedema disease of pigs has apparently been present in France since late 1949, being especially prevalent in the south and west.

—J. T. DONE.

QUIN, A. H. (1951.) **Gut edema.**—*N. Amer. Vet.* **32.** 235. **529**

The clinical entity of oedema disease of pigs has been identified in the American midwest, where it causes heavy losses. No successful therapeutic procedures have been evolved.

—J. T. DONE.

CHRISTENSEN, N. O. (1950.) Oedemer og deres patogenese. **[Pathogenesis of oedema.]**—*Nord. Vet.-Med.* **2.** 1092-1102. **530**

This article is adapted from lectures given to veterinary students. The normal control of body fluids and the symptoms of oedema are given. The importance of correct diagnosis of the basic cause of the oedema is emphasized and these causes are classified.—H. BOYD.

HOERLEIN, B. F. (1949.) **Ventricular dropsy in the dog.**—*Vet. Med.* **44.** 60-63. **531**

Three cases of internal hydrocephalus, *i.e.* an accumulation of cerebrospinal fluid in the lateral ventricles, are described, and general features of treatment are outlined. When the cisterna magna is involved, but not otherwise, puncture through the atlanto-occipital space may be attempted. Antibiotics should be administered in view of the possible co-existence of encephalitis and meningitis. The condition appears to be less uncommon than is generally supposed.—A. N. WORDEN.

PETTY, M. A. & QUIGLEY, G. D. (1947.) **The microflora of wheat feeds as related to the incidence of blue comb in chickens.**—*Poult. Sci.* **26.** 7-13. **532**

Wheat feeds with low seed viability, high bacterial flora and low fungus flora were associated with blue comb disease of fowls. The microflora are not necessarily a result of heating of the grain during bin storage.—C.M.S.

CHRISTIANSEN, M. (1949.) Vildtsygdomme og deres betydning for den almindenge hygiejne. **[Diseases of game. Significance in general hygiene.]**—*Nord. Vet.-Med.* **1.** 985-1000. [English summary modified.] **533**

In Denmark none of the diseases of game (mammals and birds) present any particular danger to domestic animals, nor is there any definite evidence to indicate that they constitute a danger to human health. Tularaemia and brucellosis have not been demonstrated in game in Denmark, salmonellosis and bovine type TB. only very seldom. Toxoplasmosis was, however, found in about 9% of 3,000 hares found dead, but it has not yet been established whether toxoplasms may be transmitted from hares to man.

SAMMONS, H. G. (1951.) **Mucinases in ulcerative colitis.**—*Lancet.* **261.** 239-240. [Author's summary copied *verbatim*.] **534**

Evidence is presented that the origin of lysozyme in the faeces in ulcerative colitis may be the pus cells. A second mucinase found in the faeces in ulcerative colitis might play a part in the aetiology of this disease.

MOSS, L. C. (1949.) **Psychoneurosis—a veterinary problem.**—*J. Amer. vet. med. Ass.* **114.** 1-2. **535**

A plea is made for the proper study of psychoneurosis in domestic animals, and the hope is expressed that the funds from the Research Foundation of the A.V.M.A. may be devoted to the purpose. Some references to relevant studies by comparative psychologists are given.—A. N. WORDEN.

POISONS AND POISONING

GRUENBERG, B. (1951.) **[Acute fluorine poisoning in a dairy herd.]**—*Refuah Vet.* **8.** pp. 8-14. [English summary p. 29.] **536**

Acute fluorine poisoning occurred in a dairy herd, some animals receiving an estimated 80 g. of sodium fluorosilicate daily. Inappetence, ruminal paresis and constipation occurred with symptoms like those of hypocalcaemia. Calcium therapy orally and intravenously was satisfactory.—JOHN SEAMER.

WALSH, T., FLEMING, G. A., O'CONNOR, R. & SWEENEY, A. (1951.) **Selenium toxicity associated with an Irish soil series.** [Correspondence.]—*Nature, Lond.* **168.** 881. **537**

The existence of a disease condition in horses and cattle in parts of Co. Limerick characterized by loss of hair and alterations in the growth of the hooves is reported. Affected cattle lose condition, have difficulty in moving about and some assume a kneeling position when graz-

ing. Blood samples had normal levels of sugar, phosphorus, calcium, magnesium and copper. Soil from affected fields had a selenium content varying from 30–324 p.p.m. compared with 2 p.p.m. in non-affected fields. Herbage had selenium values of 150–500 p.p.m. compared with 1 p.p.m.

The disease condition is thought to be selenium poisoning and further work is being carried out.—M.C.

CZAPLINSKI, F. (1950.) Zatrucia talem u małych zwierząt domowych. [**Thallium poisoning in small animals.**]—*Med. weteryn.* **6.** 531-533. 538

Thallium used for destruction of rats was responsible for poisoning of dogs, cats, fowls and pigeons, the most severely affected animals being cats, then dogs. [It is not stated whether any of these animals were poisoned by eating the bait or the dead rats.]—J. R. MITCHELL.

BARAN, W. (1949.) Obraz kliniczny satrucia talem u zwierząt. [**Syndrome of thallium poisoning.**]—*Med. weteryn.* **5.** 547-549. [English summary.] 539

Clinical signs of thallium poisoning in dogs presumably caused by ingestion of the thallium bait or of rats poisoned by such bait were described. Small breeds, very young and very old dogs appeared to be most susceptible.

—J. R. MITCHELL.

COBURN, D. R., METZLER, D. W. & TREICHLER, R. (1951.) **A study of absorption and retention of lead in wild waterfowl in relation to clinical evidence of lead poisoning.**—*J. Wildl. Mng.* **15.** 186-192. [Authors' conclusions copied *verbatim*.] 540

Clinical symptoms diagnostic of lead poisoning in ducks in relation to 2 levels of dosing are herein established.

The critical daily dosage level was found to be between 6 and 8 mg./kg. The average survival time for birds dosed at a level of 12 mg./kg. was 3·5 days less than for birds receiving lead at the 8 mg./kg. level, but there was no significant difference in the deposition of lead in the tissues of the 2 groups.

Lead metabolism studies for 3 consecutive periods showed comparable rates of retention for the 2 dosage levels, with no significant difference in lead retention. The rate of deposition of lead in the tissues, as indicated by metabolism tests, was found to be such that related clinical symptoms could be predicted.

Any one of 3 units, skeleton, liver, or soft tissues might be satisfactory as field samples for the determination of lead poisoning by chemical analysis.

RICHARDSON, J. A. & PRATT-THOMAS, H. R. (1951.) **Toxic effects of varying doses of kerosene administered by different routes.**—*Amer. J. med. Sci.* **221.** 531-536. 541

As a result of pulmonary involvement following the accidental ingestion of kerosene (paraffin used for burning in lamps) in young children a study was made to determine the extent of pulmonary injury after administration of kerosene by the following routes: intragastric, intravenous, instillation into a segment of the small intestine, intratracheal, intraperitoneal and by stomach tube, using dogs and rabbits. Details were given. Consideration of dosage and degree of lung damage indicated that aspiration is the most serious and usual feature of kerosene poisoning as it occurs clinically. [See also abst. 813 in March issue.]—E.M.J.

MCENERNEY, P. J. (1951.) **Accidental poisoning of dairy calves by benzene hexachloride.**—*Cornell Vet.* **41.** 292-295. 542

An account is given of poisoning by lindane, a preparation containing 99% benzene hexachloride γ-isomer, accidentally introduced into the feed of seven dairy calves six months old and three one month old. The older calves died, having received more of the contaminated feed. Lesions are described. The stomach contents contained 30 p.p.m., and the brain material 9 p.p.m. lindane.—G. DAVIES.

GUNNING, V. O. (1949.) **Suspected buttercup poisoning in a Jersey cow.**—*Brit. Vet. J.* **105.** 393. 543

A cow on a pasture with a heavy crop of buttercups (*Ranunculus bulbosus*) became ill, with salivation, coughing, restlessness and rigors. It recovered the next day. [Nicholson, J. A. (*V.B.* **4.** 447) recorded observations on the toxicity of four *Ranunculus* spp. in feeding tests on rabbits, g. pigs and sheep. There was slight diarrhoea at first in the smaller animals, but no later disturbance of health and one of the sheep ate 47 lb. of *R. ficaria* in eight days without ill-effects at the time or during the six months following. The occurrence of an active principle, proto-anemonin, in the common buttercup was discussed.]—A. G. SINGLETON.

MADDEN, F. J. (1950.) **Smashes in sheep and cattle from plant poisoning.** [*Silybum marianum, Cynodon incompletus, Phyllanthus lacunarius* and *Sorghum halepense*.]—*Yearb. Inst. Insp. Stk., N.S.W.*, 1950. pp 51-54. 544

Heavy mortality, *e.g.* 585 of 632 bullocks, 186 of 260 cows etc., has been recorded for each of the plants named. There are notes on the

circumstances under which each mortality occurred.—H. McL. Gordon.

I. McLauchlan, D. (1951.) **Bracken poisoning.**—*Vet. Rec.* 63. 241-242. 545

II. Foggie, A. (1951.) **Suspected bracken poisoning in sheep.**—*Ibid.* 242. 546

III. Naftalin, J. M. & Cushnie, G. H. (1951.) **Pathology of bracken poisoning.**—*Ibid.* 332. 547

I. The author described an outbreak of bracken poisoning, 12 Ayrshire heifers being involved, part of a herd of 79, grazing on rough pasture surrounding a wood with prolific bracken. Three became ill at first and symptoms were described. Certain aspects of the condition resembled pellagra in human beings and "black tongue" in dogs. The affected animals, including other suspected cases, were therefore each given 600 mg. nicotinamide *per os* and this was continued once daily for three days, in all 12 animals being treated. After the third day, the animals' temperature fell, they commenced feeding and on being turned out no further abnormal happenings were observed.

[This contrasts with failure obtained in treatment of bracken poisoning in cattle with another member of the vitamin B complex, thiamine.]

II. Two fatal cases of poisoning in sheep in the Hawick district were recorded, symptoms being described. Examination of the rumen content of one sheep indicated 2% bracken and in the second, bracken fronds were again detected. These cases suggest that sheep may be susceptible to bracken poisoning, but owing to the selective grazing habits of this species the condition occurs rarely. The diet was of low nutritional value and the sheep had supplemented this with young green bracken fronds.

III. The authors discuss the literature and present their findings on the pathology of bracken poisoning observed in three heifers fed hay and sun-dried bracken in the ratio 2:3 or hay, molasses and bracken in the ratio 1:1:3 and in natural cases of the disease. In the peripheral blood of the heifers there were marked reductions in the thrombocytes and leucocytes. Histological examination of the tissues of the cows that died revealed that the haemorrhages were of two kinds: those caused by infarction with clumps of organisms and haemorrhages from small vessel in the submucosae or the subserosae.—E.M.J.

Guilhon, J., Drieux, H., Gasse, H., Perdrix, J. & Julou, L. (1950.) Etude histologique des lésions du syndrome hémorragique des bovidés bretons. **[Pathology of a haemorrhagic disease of Breton cattle (Bracken poisoning.)]**—*Bull. Acad. vét. Fr.* 23. 181-184. 548

Clinical signs of the haemorrhagic syndrome of cattle observed in Brittany are well known and resemble those of bracken poisoning in cattle in Great Britain and the U.S.A. [see following abst.] Details are given of the effects of haemorrhagic disease on the internal organs of two young cattle from the histological standpoint. A heifer which had consumed a ration containing 50% bracken for 15 days developed symptoms 15 days after the bracken feed was discontinued and died six days later. For six weeks prior to death it had been placed on a bracken litter. A calf which had always been on a bracken litter died at seven months of age after symptoms of intestinal haemorrhagic disease. On P.M. examination fragments of bracken were found in the rumen. The findings were discussed.—E.M.J.

Guilhon, J. & Julou, L. (1950.) Considérations sur quelques syndromes hémorragiques des bovidés. **[Haemorrhagic diseases of cattle (Bracken poisoning).]**—*Bull. Acad. vét. Fr.* 23. 185-195. Discussion pp. 195-196. 549

This is a discussion of the literature on haemorrhagic diseases of cattle dating from 1893. The authors considered that the haemorrhagic syndrome of Breton cattle known as Kerdiles' disease was clinically identical with bracken (*Pteris aquilina*) poisoning in cattle in Great Britain. The authors are of the opinion that the "haemorrhagic diseases" of cattle are imperfectly understood. In the course of discussion on the paper G. concluded by stating his own views. It was necessary to know (1) if the vegetation of a district where the disease was manifest included plants likely to provoke the disease, (2) the effect of the composition of the soil on plants and (3) to make a study of the blood of the affected animals.—E.M.J.

Rathnasabapathy, V., Rao, K. L., Krishnaswamy, A. & David, J. C. (1949.) **A preliminary study of the toxicity of** *Calotropis gigantea.*—*Indian J. med. Res.* 37. 483-494. 550

In feeding experiments with the leaf powder of *Calotropis gigantea,* a common perennial plant found on waste lands in India and

reputed to possess medicinal and toxic properties, ten dogs died but two calves and two goats survived. The work was undertaken because of reports in India that it was poisonous for cattle. Some details are given of pharmacological studies made.—S. DATTA.

See also absts. **334-335** (food poisoning); **495** (vitamin A poisoning).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

GAADE, W. (1948.) Beginselen der Organischchemische Nomenclatuur. [**The principles of nomenclature in organic chemistry.**] pp. xii +224. New York, Amsterdam. London, Brussels: Elsevier Publishing Co. Inc. (Distributors: London: Cleaver-Hume Press.) 12s. **551**

This is an elaborate commentary on the internationally accepted rules of nomenclature of organic chemical compounds. It gives a survey of the development of this nomenclature since the famous Geneva congress of 1892 up to and including the proposals that were discussed at the 1947 London conference of the Union Internationale de la Chimie. The book contains the following chapters: History, General rules, Trivial names, Hydrocarbons, Substitution by functional groups, Open-chain compounds containing hetero-atoms, Alicyclic compounds, Aromatic compounds, Heterocyclic compounds, Condensed-ring compounds, Use of prefixes and orthography, Appendix. A great number of exercises is also included.

—A. J. ULTÉE, JR.

SCHUBERT, G. (1948.) Kernphysik und Medizin. [**Nuclear physics and medicine.**] pp. 354. Göttingen: "Muster-Schmidt" K. G. 2nd Enlarged Edit. **552**

Physicians, biologists, physicists, and research workers with a knowledge of German will find much of interest and value in this compact but comprehensive work by a former pupil of Prof. F. Joliot. The book consists of two parts: in the first 200 pages there is a general discussion of the physics of atoms, atomic energy, radio-activity, applications of isotopes etc. in medicine, while the remaining 100 pages are devoted to the technical aspects of the subject: apparatus, dosage, protection, atomic-bomb explosion, etc.

There is a useful bibliography of 25 pages, which is up-to-date and commendably international; an index of names and subjects; 27 tables; and 53 illustrations. The paper is of poor quality, but the print is clear and the style lucid.—W. R. BETT.

KATTUS, A. A., NEWMAN, E. V. & FRANKLIN, J. (1951.) **The diuretic activity of compounds related to xanthines, uracils and triazines as determined in dogs.**—*Johns Hopk. Hosp. Bull.* **89.** 1-8. [Authors' summary copied *verbatim.*] **553**

The diuretic activity of twenty xanthine compounds, fifteen uracil compounds, three triazines, and three compounds of unrelated structure has been studied in dogs. Diuretic acivity was determined by comparison of urine volume and sodium excretion on the test day with these values on control days. Certain xanthine compounds showed high diuretic potency but this was complicated by emetic potency. Diuretic potency was not marked among uracil compounds but emetic activity was practically eliminated. The most potent diuretic among the xanthines was 1, 3-diethylxanthine, among the uracils 1-n-propyl-3-ethyl-6-aminouracil.

COFFEE, W. M. (1949.) **Technic of direct blood transfusions in large animals.**—*Vet. Med.* **44.** 113. **554**

A brief note on transfusion in horses as carried out by a practitioner.—L. M. MARKSON.

FOURMAN, P., BARTTER, F. C., ALBRIGHT, F., DEMPSEY, E., CARROLL, E. & ALEXANDER, J. (1950.) **Effects of 17-hydroxy-corticosterone ("compound F") in man.**—*J. clin. Invest.* **29.** 1462-1473. [Authors' summary copied *verbatim.*] **555**

Whether carbohydrate-active steroids of the adrenal cortex have a desoxycorticosterone-like effect on sodium and potassium metabolism has been investigated for 17-hydroxy-corticosterone (compound F).

A normal male subject was twice observed for three days after the intramuscular injection of 50 mg. of F, and twice for three corresponding control days. The effect of F on the urinary excretion of N, K, Na, Cl, water, P, Ca, and Mg was measured by the difference between F and control data. The results were evaluated statistically by analysis of variance.

With F (as with adrenocorticotropic hormone, ACTH), circulating lymphocytes and eosinophils fell. About 1·6 g. of nitrogen were lost. Glycosuria appeared and was apparently due to a lowered renal threshold.

With F (as with ACTH), potassium was

lost (about 20 meq. [*i.e.* 20 milliequivalents] of potassium on the day F was given); this loss of K was restored by the next morning after breakfast; there was a "rebound" retention after that. There were sodium changes beyond those associated with chloride which were inversely related to changes in potassium. It is suggested that sodium entered potassium deficient cells, although this interpretation cannot be made with confidence in the absence of measurements of ECF [extra cellular fluid] electrolytes. These electrolyte changes resemble changes that occur with DOCA [desoxycorticosterone acetate] under simliar conditions.

Other electrolytes were not significantly affected.

See also absts. **296** (staphylococcal infections); **299** (mastitis); **302** (swine dysentery); **305** (anthrax); **316-317** (Johne's disease); **318** (leprosy); **319** (antibiotics and metabolites); **321** (sensitivity to antibiotics of *Corynebact. renale*); **322** (action of antibiotics on *Pfeifferella mallei*); **340** (brucellosis); **347** (black disease); **351** (mastitis); **365** (antrycide); **369-370** (blackhead); **371** (aureomycin in canine coccidiosis); **372-373** (coccidiosis); **394** (penicillin); **423** (virus diseases); **433** (terramycin in Rocky Mountain spotted fever); **437** (insecticide); **449-450** (D.D.T.); **473** (hetrazan); **490** (aureomycin); **502-504** (ketosis); **525** (antihistamine drug in tympany); **542** (benzene hexachloride poisoning); **586** (action of penicillin on lactobacilli); **615** (phenothiazine); **635** (hormone research).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

I. Butcher, E. O. (1951.) **Development of the piliary system and the replacement of hair in mammals.**—*Ann. N.Y. Acad. Sci.* 53. 508-516. **556**

II. Herrington, L. P. (1951.) **The role of the piliary system in mammals and its relation to the thermal environment.**—*Ibid.* 600-607. **557**

III. Baker, B. L. (1951.) **The relationship of the adrenal, thyroid, and pituitary glands to the growth of hair.**—*Ibid.* 690-707. **558**

I. A detailed description is given of hair development in the rat and mouse. Hair cycles occur in the rat approximately every 34 days. The new hair does not push old hair from the follicles but grows from new follicles beside the old in the stratum germinativum. Alkaline phosphatase appears to be abundant in the mesodermal papilla as the follicle elaborates hair, but during the quiescent period of the cycle the enzyme is present only in negligible amount. Plucking hair appears to initiate activity in the hair germ whereas shaving does not.

II. The piliary system may be regarded as a variable thermal resistance developed by animals to assist in the maintenance of a constant body temperature under variable conditions of size and environment. The value of wool, hair, fur, feathers etc. for this purpose is in their ability to stabilize a thickness of air round the body. The thickness of the coat assisted by the power of pilo-erection is the most important factor in this connection. The addition of 2.5 cm. thickness of fine fleece or fur permits the environmental temperature to fall to 0°C. without alteration of body temperature. However, in addition there must be some means of adjusting the metabolic rate and also for alterations in hair character if a constant body temperature is to be maintained under all natural conditions. These factors are mainly controlled by the endocrine system. It has now become possible to estimate that habitat temperature which will be associated with a minimum temperature regulation stress for any plane of nutrition.

III. In the rat, hair grows at a more rapid rate following adrenalectomy. The most potent hair growth inhibiting substances so far found in the adrenal cortex are corticosterone and its derivatives, loss of nitrogen being caused by these substances. Other conditions which inhibit hair growth are a reduction in food intake, diets deficient in vitamin B complex filtrate factors and large doses of oestrogen. The latter probably causes inhibition by stimulating the pituitary to release ACTH [adrenocorticotrophic hormone]. Thyroidectomy causes a reduction in the rapidity with which hair grows after clipping and a delay in the time of initiation of successive hair cycles. Hypophysectomy causes a general slowing down in the rate of hair growth which may be due to the fact that this operation is followed by atrophy of the zona fasciculata of the adrenal cortex.

—J. A. Nicholson.

Parnell, J. P. (1951.) **Hair pattern and distribution in mammals.**—*Ann. N.Y. Acad. Sci.* 53. 493-497. **559**

The relatively uniform hair pattern of the common rodent is thought to represent a primitive type, but many other mammals show a diversity of hair pattern such as whorls, feathering, crests etc. The most significant factor in hair pattern appears to be hair slope which is probably due both to extrinsic and intrinsic factors. There is also probably a relationship between slope and hair thickness and skin thickness which requires further study.

—J. A. Nicholson.

WHITLOCK, J. H. (1951.) **The evaluation of animal growth.**—*Cornell Vet.* **41.** 254-266. [Author's summary copied *verbatim.*] 560

The measurement of physique first applied by Wetzel to children has been found to yield valuable information when applied to sheep. Our data indicate that the relationship between length and log weight is a linear constant for each normally growing lamb. Therefore, it is possible to obtain an objective measurement of the degree of emaciation brought about by disease conditions. At present, due to lack of sufficient data, it is not impossible to use the rate of development in animals as it is used by Wetzel in children. Quantity of growth (q), as determined by the formula $q = \log_e \frac{Z_1}{Z_0}$ [Z_0 is the initial weight and Z_1 is the weight at the end of the experiment] is recommended as a substitute until more data are accumulated.

Various diseased conditions of growth, including emaciation, atrophy (negative growth), and hypertrophy (overcompensation), are illustrated or described in terms of physique and growth analysis. It is suggested that speculation about the growth process in terms of the physical principles involved may indicate profitable lines of research.

I. ADOLPH, E. F. & LAWROW, J. W. (1951.) **Acclimatization to cold air; hypothermia and heat production in the golden hamster.**—*Amer. J. Physiol.* **166.** 62-74. [Authors' summary slightly modified.] 561

II. ADOLPH, E. F. (1951.) **Responses to hypothermia in several species of infant mammals.**—*Ibid.* 75-91. [Author's summary modified.] 562

I. The colonic temperature from which 50% of adult hamsters do not recover was 3·8°C. ± 0·5°. This is a much lower lethal temperature than for most adult mammals. Heat production, measured as oxygen consumption, was about equal at rest to that in rats. During sudden cooling it augmented 6-fold, and then diminished progressively as the colonic temperature fell towards 4°C. Breathing frequency and heart beat frequency bore proportions to oxygen consumption that were not constant during cooling. No consistent increase of heat production was manifested as a final defence against cooling below 5°C. Total exchanges of heat were computed; they show that the paralysis of heat production by chilling is less in hamsters than in rats of equal body weight. Rates of heat loss also were much less than in rats, which have longer appendages and sparser fur. Acclimatization to cold air was produced by sojourn in air of 4° to 6°C. for 6 days; it was measured in increase of resting minimal oxygen consumption, manifested after the 6 days, and in decrease of it, manifested after 3 weeks of no cooling. No acclimatization was apparent in the maximal oxygen consumption during cooling, in rate of colonic cooling, in lower limit of tolerable colonic temperature, in breathing frequencies, or in heart beat frequencies. Golden hamsters sometimes became hypothermic spontaneously; occasionally they recovered from this state while still in a cold environment; others recovered when early transferred to a warmer environment. This state is not sharply separated from one of hibernation, which maintains hypothermia and lethargy for days.

II. Cats, golden hamsters and rats, and to some extent mice, g. pigs and rabbits, were studied at various postnatal ages with respect to lower lethal temperature limits, heart-beat frequencies, and breath frequencies. Lethal temperature that could be endured became higher with increased age in all species. In the cat it rose from 7°C. to about 18°C., while in the hamster only from 1°C. to 4°C. Heart-beat frequencies bore diverse relations to body temperatures. The relation tended to be linear in adults and exponential in infants. The transition from infant to adult occurred in at least two steps. Isolated perfused hearts manifested relations to temperature unlike those of the heart *in situ*. Those relations did not change with age except in the hamster. Breath frequencies decreased as temperature decreased in new-born animals. After 10 to 15 days of age breathing was markedly accelerated in response to cooling; at this age the individual probably acquired the capacity to increase heat production as a feature of its temperature regulation. The adult pattern of responses to hypothermia emerges at the end of serial modifications of transitional properties present at birth. Each modification occurs at a specific age.

DAVIDSON, J. N., LESLIE, I. & WHITE, J. C. (1951.) **The nucleic-acid content of the cell.**—*Lancet.* **260.** 1287-1290. 563

Deoxyribonucleic acid (DNA) and ribonucleic acid content of normal and pathologic bone marrow, blood and sperm cells have been determined. DNA is exclusively nuclear and knowledge of its content in a tissue assists in the determination of cell content of other constituents.—JOHN SEAMER.

SCHUBERT, G. (1950.) Über den Farbensinn und das Sehvermögen des Hundes. [**Colour distinction and sight of the dog.**]—*Wien. tierärztl. Mschr.* **37.** 127-128. 564

S. maintains that dogs have been shown by conditioned responses to be able to distinguish between different shades of colour. Spectrum sensitivity curves are not yet available for the dog's retina, but in the case of the cat retina the conduction of curves for red, green and blue are exact and precise.

The visual faculty of the dog does not compare with that of man since it does not possess as do primates a foveal region in which each unit has its own central communication channel. The dog does, however, possess an accommodating mechanism similar to that of the human eye, and it is incorrect to assume that it has faulty stereoscopic vision because of the lateral position of the eyes. The dog has a duo-ocular field of vision, which is the fundamental condition for stereoscopy.—A. N. WORDEN.

HERTZ, R., WESTFALL, B. B., BARRETT, M. K. & TULLNER, W. W. (1949.) **The effect of ectopic autologous grafts of androgenstimulated prostate upon the serum "acid" phosphatase of the dog.**—*J. nat. Cancer Inst.* **10.** 61-66. [Authors' summary copied *verbatim.*] 565

In 11 dogs, the surgical grafting of autologous prostate to the liver, omentum, or subcutaneous tissue, with or without associated intensive androgen treatment, effected no significant elevation in serum acid phosphatase. Nevertheless, high acid phosphatase content could be demonstrated in the recovered grafts, and they were observed histologically to be made up of actively secreting, well vascularized prostate tissue. These observations suggest that the mere presence of ectopic prostate tissue which is rich in acid phosphatase is not sufficient to produce in the dog the type of elevation of serum acid phosphatase seen in clinical cases of metastatic carcinoma of the prostate.

KLEIBER, M. (1947.) **Body size and metabolic rate.**—*Physiol. Rev.* **27.** 511-541. 566

Data available from the literature on the body weight and metabolic rate per day in mice, rabbits, dogs, sheep, cows, etc. under comparable conditions were tabulated and a regression line calculated. The metabolic rate of mammals is more nearly proportional to the surface body area than to their body weights. Recent results indicate that the metabolic rate divided by the $\frac{3}{4}$ power of body weight is independent of body size, and "$kg^{\frac{3}{4}}$" was chosen as the unit of metabolic body size. This unit is useful for comparing food capacity and production capacity of animals that differ in body size.—C.M.S.

MCCANCE, R. A. & WIDDOWSON, E. M. (1951.) **A method of breaking down the body weights of living persons into terms of extracellular fluid, cell mass and fat, and some applications of it to physiology and medicine.**—*Proc. Roy. Soc.* Ser. B. **138.** 115-130. 567

Assuming that the composition of the fat-free portion of the body remains constant after reaching chemical maturity, determination of either the total body water or total fat-free solids should permit of estimation of the amount of fat in the body. The total body water may be determined by the urea method and the extra-cellular fluid volume by the thiocyanate method, the difference giving the cell water. From this the weight of cellular tissue may be calculated since cells contain 67% by weight of water.

A study of normal and obese persons indicated that fat in normal men varied from 7·2–22·4% of the body weight and in obese men, from 34–44%.—J. A. NICHOLSON.

MCCLYMONT, G. L. (1951.) **Volatile fatty acid metabolism of ruminants, with particular reference to the lactating bovine mammary gland and the composition of milk fat.**—*Aust. J. agric. Res.* **2.** 158-180. [Author's summary slightly modified.] 568

Arterial acetic acid levels in cattle were found on the feeds studied to reach a maximum value of 8–14 mg.% 2–5 hours after feeding, declining to 5–8mg.% eight hours after feeding and to 2–6 mg.% 16 hours after feeding. On starvation for approximately 72 hours, values fell as low as 1·5 mg.%. There was a close association between changes in arterial acetic acid and ruminal volatile fatty acid levels.

Acetic acid was found to be a major metabolite of the bovine mammary gland, arterio-venous differences being directly dependent on the arterial level and of the order of 2–6 mg.% or 40–80% of the arterial level in the fed animal. Arterial levels and mammary arterio-venous differences of acetic acid were unaffected by cod-liver oil feeding or low roughage-high concentrate diets, both of which depressed the fat percentage and the Reichert-Meissl value of the milk fat. Hyperinsulinism and recent or delayed milking also had no effect on the arterio-venous differences.

The depression in the Reichert-Meissl value during fasting was not reversed by intraruminal or intravenous acetic acid infusions despite the maintenance of high blood levels of acetic acid.

There was no detectable correlation between carbon dioxide output by the mammary

gland and the acetic acid uptake of the gland, indicating that the acid served some "useful" purpose in the gland.

It is concluded, taking into account other evidence, that acetic acid is utilized in the gland for fat synthesis and oxidation, depending on the requirements of the gland, but that the proportion of lower fatty acids in milk fat is not dependent on the uptake of acetic acid.

PRICE, P. B. (1951.) **Blood volume in health and disease.**—*J. Amer. med. Ass.* **145.** 781-785. [Author's summary copied *verbatim.*] 569

Because blood volume is still something of an enigma interest in it has been largely academic. Actually it is a matter of great practical importance to physicians and surgeons.

Estimates of blood volume based on body weight or on the venous hematocrit are available. More exact methods of measuring plasma and cell volume are now available, but they are technically difficult.

Blood volume presents a dynamic equilibrium between constantly varying additions and losses of the various blood components, which operate to some extent independent of each other.

In healthy persons, blood volume is maintained constantly at an optimum level. The mechanism by which that is accomplished is not fully understood. In many diseases the regulation is faulty and blood volume is kept low, to the detriment of the circulation.

Many conditions, surgical and medical, are characterized by reduced blood volume. Restoration of blood volume to normal is an important part of the rational successful treatment of those conditions. Good preoperative and postoperative care includes control of blood volume.

It is not an easy matter, however, to estimate accurately in a given case the blood deficit which exists or to correct that deficit. Transfusions are necessary but they have limitations which should be recognized. At best they only tide the patient over the critical periods until health is sufficiently restored for the body to take over the functions of blood volume maintenance and regulation.

ANDREASI, F. & COSTA, A. (1949.) Teores normais de cálcio e fósforo inorgânico no sangue do cavalo "puro sangue inglês". **[Normal blood levels of calcium and inorganic phosphorus in the Thoroughbred horse.]**—*Rev. Fac. Med. vet., S. Paulo.* **4.** No. 1. pp. 47-62. [Abst. from English summary.] 570

An account of a statistical analysis of data for Ca and inorganic P levels in the blood of 108 Thoroughbred race horses kept under the same conditions of exercise, feeding, etc. Blood P and Ca data were obtained for 67 horses (males) in separate age groups 2–7 years old, and for 39 mares age groups 3–5 years old. Application of F and *t* tests to the sets of data revealed no statistically significant differences in average P or Ca values attributable to differences in age in males or females, or to sex difference. In males, average P levels varied from 2·17 to 3·2 mg.%, average Ca levels varied from 9·98 to 13·59 mg.%. In mares, average P levels varied from 2·3 to 2·82 mg.% and average Ca levels from 11·02 to 12·3 mg.%; all the values were considered to be within normal limits for equine blood.

—K. J. SINCLAIR.

YAKUSHEV, V. I. (1950.) **[Differences in the blood pressure of dairy cows of different levels of milk yield.]**—*Sovetsk. Zooteh.* **6.** 54-67. 571

Data on arterial and venous blood pressure were collected from 636 lactating cows producing 7–60 kg. [*sic*] milk each daily on three farms and at the All-Union Veterinary Experimental Institute, Moscow. Pressure increased with increased milk yield both in individuals and in breeds. It increased with age, being appreciably higher during fifth and sixth than during earlier lactations. In addition to daily variations and seasonal influence, blood pressure was also influenced by exercise.—F.A.A.

LANNEK, N. (1949.) **A clinical and experimental study on the electrocardiogram in dogs.**—*Thesis, Stockholm.* pp. 188. [In English.] 572

This study falls into two parts, the electrocardiographic picture of the normal dog and the picture in clinical cases with myocardial lesions.

Part I (pp. 11-90) describes the electrocardiograms (E.C.G.) of 230 clinically normal dogs aged two months to eight years and over and representing some 27 breeds of all sizes. The observations were made on unanaesthetized animals restrained on their right sides using bipolar and unipolar limb and precordial leads attached to needle electrodes and connected to a single channel amplifier E.C.G. with photographic recording apparatus. The tracings obtained were carefully measured and data obtained for the various phases of the E.C.G. were subjected to a detailed statistical treatment. On the basis of the results of this treatment figures are given which may be taken as the normal pattern of the E.C.G. in the dog.

Age, sex and breed were not associated with differences more marked than those observed in a single animal in repeated recordings; the causes of these individual variations are discusssed as well as the influence of respiratory movements.

In Part II (pp. 91-185) the E.C.G's of 106 sick dogs not previously recorded are reported. These animals were placed in various groups (the complete diagnostic criteria are not stated) namely: thallium poisoning (the sulphate is widely used as a rat poison in Stockholm), acute gastro-enteritis, uraemia, pneumonia, infectious processes other than pneumonia, diabetes mellitus, and a miscellaneous group. Subsequently these all showed morphological evidence either macroscopic or microscopic of myocardial damage. In addition there was a small group of eight cases with similar E.C.G. changes, but in which no morphological lesions were demonstrated. In 98% of these animals statistically significant or probable deviations from the normal E.C.G. were observed. These changes which were inconstant for cases in any one diagnostic group, included depression of the T wave and ST segment, increased duration of QRS and occasional arrhythmias. The data for the E.C.G. of the normal dog will be especially valuable, as no other comparable study is readily available.

[While the first part of the study is a most valuable contribution to our kowledge of the E.C.G. in normal dogs, the work reported in Part II should be accepted with some caution. The changes reported, although statistically significant, are extremely variable and inconstant, so that it is not easy to decide that any pattern of change in the E.C.G. is associated with any type of myocardial lesion demonstrated and the author makes no attempt to do so. An assessment of the extent and precise locus of the lesions might have been helpful. In particular it would have been interesting to know whether any parts of the conducting system were involved. In many of the clinical syndromes examined—*e.g.* uraemia with its renal insufficiency—one would expect considerable disturbances in the electrolyte and acid-base balance etc., and it is possible that deviations from the dog's normal indoor environment may have been just as responsible for some of the E.C.G. abnormalities recorded as the myocardial lesions demontrated later.]—H. B. Parry.

Krieger, H., Storaasli, J. P., Friedell, H. L. & Holden, W. D. (1948.) **A comparative study of blood volume in dogs.**—*Proc. Soc. exp. Biol., N.Y.* **68.** 511-515. 573

The method of injecting the protein fraction of human plasma activated with I^{131} into dogs to determine the plasma volume permitted rapid and accurate determinations for a much longer period after injection than methods using Evans Blue dye or red cells tagged with P^{32}. Blood volumes in ten dogs are compared.

—C.M.S.

Somers, R. K. (1951.) **The lymph glands of cattle, hogs, and sheep.**—*Circ. U.S. Dep. Agric.* No. 866. pp. 29. 574

The physiology of the lymphatic system is briefly outlined. The location and appearance of the major lymph nodes in cattle, pigs and sheep are described and illustrated.

—Anita M. Mandl.

Moir, R. J. (1951.) **The seasonal variation in the ruminal microorganisms of grazing sheep.** —*Aust. J. agric. Res.* **2.** 322-330. [Abst. from author's summary.] 575

Samples of rumen liquor were taken by stomach tube, at approximately monthly intervals for a period of 19 months, from three mature Merino wethers grazing annual pastures in a Mediterranean-type climate in Western Australia.

Marked seasonal fluctuations in the total numbers of organisms were found. Two definite levels were evident, a high level associated with the green grazing in winter, with a peak in the spring, and a low level associated with the dry grazing. The lowest mean count obtained was 32 million per cu. mm. in April, 1949, and the highest was 88 million per cu. mm. in November, 1948. The numbers of protozoa and of *Oscillospira* were found to follow a similar seasonal cycle, the former showing an extremely high spring peak.

Except for minor additions during the period of green grazing, all morphological types were found to be constantly present, but the balance of the many constituent organisms changed at different times of the year.

The relation of these various changes in the numbers and balance of the ruminal microorganisms to changes in the chemical composition of the grazing, particularly the protein content, is briefly discussed.

Völker, R. & Krause, D. (1950.) Die Reaktionsweise des isolierten Pferdedarms auf Überträgerstoffe des autonomen Nervensystems. **[The equine intestine and chemical transmitters of the sympathetic nervous system.]**—*Dtsch. tierärztl. Wschr.* **57.** 73-75; 88-90. 576

Experiments with isolated portions of horse intestine indicated that acetylcholine ex-

cited the whole of the intestine whereas sympathin [nor-adrenalin and adrenalin] and "adrianol" inhibited only the large intestine. Adrenergic agents first stimulated the small intestine and then caused inhibition of both tonus and movements.—J. A. NICHOLSON.

GRACHEV, I. I. (1949.) **[On the reflexes of the mammary gland.]**—*Zhurnal Obshchey Biologii.* **10.** 401-420. 577

An account of studies on the reflexes caused by stimulation of the udder of the goat, particularly on milk secretion and ejection, pulse rate and respiration; it includes anatomical studies of the nervous and vascular systems of the udder. Tests were made on anaesthetized goats in which the udder had been disconnected from the body except for the nerves; the experiments were described in detail. The conclusion is that the cycle of mammary function is probably the result not only of hormonal influence but also of direct stimulation caused by sucking or milking.—F.A.A.

FORTI, R. (1950.) Sulla composizione chimica del liquido sinoviale normale degli equidi contenuto in sostanze minerali. **[Chemical composition of normal synovial fluid of horses.]** —*Zootec. Vet., Milan.* **5.** 728-729. [English summary.] 578

Analyses of synovial fluid obtained from the radio-carpal, femoro-tibial and tibio-tarsal joints of horses immediately after slaughter, gave the following average composition. Dry matter 3·1g.%, ash 0·83g.%, Na 320mg.%, K 1,717mg.%, Ca 8·87mg.%, Mg 1·73mg.%, inorganic P 2·86mg.%, Cl 352·5mg.%. These findings are similar to those for cattle.

—J. A. NICHOLSON.

SEBRUYNS, M. (1948.) Recherches histologiques sur la structure de l'épithélium vésical du chien. **[Histological investigation on the epithelium of the urinary bladder of the dog.]** —*Acta Anat., Basle.* **6.** 107-112. [In French; English & German summaries. English summary copied *verbatim.*] 579

Through the use of an appropriate fixative and Heidenhain's iron haematoxylin, it is possible to bring out the existence of a bundle of tonofibrils in the superficial layer of cells of the epithelium of the urinary tract, known as transitional epithelium. These tonofibrils increase the cohesion of the cells and have elastic properties, which allow them to adapt to the changes in shape these cells undergo. They probably also increase the resistance of the latter to desquamation.

FULLER, J. L. (1951.) **Genetic variability in some physiological constants of dogs.**—*Amer. J. Physiol.* **166.** 20-24. [Author's summary copied *verbatim.*] 580

The systolic blood pressure, heart period, cardiac arrhythmia, pupil diameter, maximum pupil contraction and rectal temperature were studied in a population of purebred dogs. All of the variables were significantly different between breeds. Rectal temperature also showed a significant sex difference. The results are interpreted as due to accidental selection for physiological characteristics in the breeds, and the usefulness of such variation for physiology is pointed out.

MARCATO, A. (1947.) Su di alcune particolarita della tiroide delle pecore viventi sul litorale Adriatico. **[Abnormalities in the thyroid of sheep living on the Adriatic coast.]** —*Atti Soc. ital. Sci. vet.* **1.** 21-28. [English and French summaries.] 581

Signs of reduced thyroid activity were constant findings in healthy sheep from the Gabicce hills along the Adriatic coast; they were observable both by the naked eye and under the microscope. M. considers this reduced activity to be the result of adaptation to environmental conditions, particularly to the high percentage of iodine in the sea air.

—B. BALDELLI.

WOLFF, E. (Étienne), WOLFF, E. (Émilienne) & HAFFEN, K. (1951.) Sur la différenciation *in vitro* de la syrinx chez l'embryon de canard. **[Differentiation *in vitro* of the syrinx in the duck embryo.]**—*C.R. Acad. Sci., Paris.* **233.** 500-502. 582

The syrinx of the duck, explanted from the embryo before gonadal differentiation, and cultured *in vitro,* was found to show typically male development.—ANITA M. MANDL.

TIEMEIER, O. W. (1950.) **The os opticus of birds.**—*J. Morphol.* **86.** 25-46. 583

The thickened cartilaginous ring around the entrance of the optic nerve is replaced by bone in the eyeball of many birds (over 67% of those examined by T.). Such an os opticus is quite distinct from the sclerotic bone ring formed by ossification of the fibrous connective tissue layer of sclera. No specific function is ascribed to this structure although support and rigidity are mentioned.—R. N. SMITH.

FOLLEY, S. J. (1949.) **Biochemical aspects of mammary gland function.**—*Biol. Rev.* **24.** pp. 316-354. 584

The arterio-venous technique for investigating mammary metabolism is reliable only for

qualitative purposes. The arterio-venous ratio of a given metabolite may not safely be used to determine the ratio of mammary blood flow to milk secretion; firstly because the loss of a constituent, such as calcium, by other routes such as lymph must be accounted for; and secondly because whereas blood concentrations are determined at one instant, milk yields are measured over a period, so that due allowance is not made for fluctuations of concentration in each. Blood volume changes due to fright, which also interfere with the accuracy of the method, may be minimized by giving nembutal, which does not affect blood sugar levels or milk secretion.

Experiments with surviving tissue slices show that the mammary gland respires relatively actively. The value of $-Q\,0_2$ was 16 in the mouse, *i.e.*, comparable with rat liver and less than rat kidney. In the cow it was 3·5, and intermediate in other species. Glucose and mannose are the only sugars so far found to increase the oxygen uptake of rat mammary tissue. At parturition the rate is increased several-fold and continues to rise as milk yield increases. The arterio-venous oxygen ratio remains fairly constant regardless of the functional activity of the gland.

Mammary gland slices show appreciable anaerobic glycolysis (acid production) which is decreased in the presence of oxygen. Lactic acid is formed on incubation, and it is possible that part of the acid formed aerobically may be citric acid or aliphatic acids.

The source of energy of the normal lactating gland is not clear; in addition to glucose, there is evidence that carbohydrate, long-chain fatty acids, β-hydroxybutyric acid and acetate can be oxidized.

The enzymes of the mammary gland include alkaline phosphatase and arginase, and the more recently demonstrated desoxyribonuclease, catalase, xanthine dehydrogenase and acid phosphatase. The concentration of alkaline phosphatase increases with functional activity rather than with growth. Histological techniques, which though useful do not provide conclusive evidence, indicate that the enzyme is localized in the myoepithelium between the basement membrane and the secretory cells and not in the secretory epithelium. If this is so its role may be associated with the transport of metabolites. The level of arginase has been found in the rat to increase from the fifth day of lactation, reaching a peak on about the 20th day. Following weaning the level falls much more rapidly than that of phosphatase. The enzyme is probably associated with gluconeogenesis from proteins or amino acids. Its concentration is low in herbivores, including ruminants.

Present evidence indicates that the principle precursor of blood lactose is glucose. Evidence that blood lactate and pyruvate are absorbed by the gland has proved invalid. Other hexoses may be supplementary sources. [If glucose alone accounts for lactose formation there is very little extra glucose for metabolism in other ways.] It is not known whether lactose is synthesized anaerobically by tissue slices. The role of glycogen may either be that of an intermediate in lactose formation or simply that of a store. Lactose synthesis has been demonstrated in tissue slices but not in cell-free tissue extracts. The source of the galactose moiety is not known. Lactose continues to be synthesized by the isolated gland when glucose alone is perfused, and the rate is not increased by the addition of galactose. It is possible that lactose is formed from glucose and β-galactose-1-phosphate, and that the source of the latter is not galactose but glucose phosphate. It may be significant that the carbohydrate moiety of horse serum glucoprotein has been shown to be an equi-molar complex of mannose and glucose.

It is now generally agreed that the earlier view that milk fat arises from blood phospholipoids is untenable. The neutral blood lipoids, particularly the glyceride fraction, probably form one source of blood fat, and their uptake appears to increase with the degree of secretory distension of the tissues. The short-chain fatty acids of milk fat may arise (a) by degradation of long-chain fatty acids by an oxido-reduction process, (b) by synthesis from carbohydrate and (c) by synthesis from short-chain acids derived from the blood. Probably all three sources contribute. Iodine-labelled dietary fat appears in the milk. The evidence for the carbohydrate source is indirect, depending on respiratory quotient measurements. In the cow and the goat, at least, the R.Q. is low in the presence of glucose, and this does not appear to be an important source of milk fat in these species. Of the short-chain acids considered as probable sources of milk acids, acetoacetate was found not to be absorbed by the gland, while β-hydroxybutyrate, although absorbed in quantities which could account for fatty acid formation, is not a likely source because it is found in increased quantities in ketosis, whereas the milk acids decrease in this condition.

The fact that the short-chain acids appear predominantly in the milk of herbivores, particularly ruminants, suggested that acetic, propionic and butyric acids originating from the

fermentation of cellulose by micro-organisms, might form an important source of milk acids. Strong evidence is accumulating in support of this view. Intravenous acetate injection in fasted ruminants failed to raise the depressed levels of milk fat, but in slices of the lactating mammary gland of the goat, acetate can be utilized as the sole substrate, with high respiratory quotient, indicating the synthesis of fat from acetate at an appreciable rate. The sheep udder also utilizes acetate with high respiratory quotient. Moreover, glyceride fatty acids isolated from the mamma of pregnant rabbits fed with labelled acetate contained outstandingly high concentrations of labelling isotope. The liver fat was less radioactive, and could not therefore have been the source of the labelled milk fat. *In vitro*, slices of rabbit mamma utilized acetate only slowly, and with low R.Q., when it was the sole substrate, but the utilization was markedly increased in the presence of glucose. This effect of glucose on acetate utilization was even more marked in gland slices from the sheep.

Little is known about the precursors of milk protein. The amount of free amino acids absorbed by the gland from the blood is too small to account for the milk protein, and it is probable that some fraction of blood protein is transferred to milk protein.

Deamination with the production of urea is possible in some species, and is probably brought about by arginase. It is anomalous that the only species in which urea has been demonstrated is the goat, in which the arginase level is strikingly low.

In conclusion it is stressed that the major milk constituents are probably formed by more than one process simultaneously, and that the differences between species are appreciable.

—Nesta Dean.

See also abstr. **329** (role of colostrum); **633** (book, physiology).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

Thomas, S. P. & Anantakrishnan, C. P. (1949.) **Investigations on machine milking.**—*Indian J. Dairy Sci.* **2.** 70-76. **585**

In comparisons on 12 cows and 6 buffaloes of the efficiency of machine milking and hand milking no difference was observed in milk yield or fat percentage. The bacteriological quality of machine drawn milk was, however, relatively better. Buffaloes took a longer time to become adapted to machine milking than cows.—S. S. Prabhu.

Auclair, J. (1951.) Action inhibitrice de la pénicilline sur les lactobacilles utilisés dans la fabrication du Gruyère. [**Inhibitive action of penicillin on lactobacilli used in the manufacture of Gruyère cheese.**]—*Lait.* **31.** 121-133. **586**

Penicillin present in milk from penicillin-treated cows inhibits the action of ferments used in the manufacture of Gruyère cheese. Since penicillin-resistant strains of lactobacilli could not be obtained, destruction of penicillin by penicillinase was attempted. The early addition of 0·1% penicillinase inactivated relatively high concentrations of penicillin (1 u. per ml.).

—W. R. Bett.

Brandly, C. A. (1951.) **Poultry diseases as public health problems.**—*Publ. Hlth Rep., Wash.* **66.** 668-672. **587**

B. discussed the various ways in which poultry either directly or indirectly may harbour agents pathogenic for man. A plea is made for rigid *ante mortem* and *post mortem* examination of all poultry offered for human consumption.—D. Luke.

Johns, A. W. (1951.) **Food poisoning from a Central School's kitchen.**—*Med. Offr.* **86.** 85-86. **588**

Clostridium welchii Type 6 was isolated from galantine prepared from minced meat and tinned "luncheon meat" and was considered to be the cause of the outbreak affecting over 300 children who had eaten it. The source of the infection was not ascertained.

Crawford, R. (1951.) **The operation of veterinary club practice in a sheep practice.**—*Aust. vet. J.* **27.** 103-110. **589**

The club described covers farms in an area of 220 by 50 miles, devoted mainly to raising store sheep and cattle. In addition there are 25,000 dairy cattle in the area.

C. outlines the spheres of political and commercial enterprise necessary to this type of organization, and the professional duties of the club veterinarian. These include the treatment of sick animals, extension and survey work, and field trials.

The optimum size of a club is described as one capable of employing six to nine veterinarians. Lay staff carry out many duties including dispensing.—D. C. Blood.

Neumann-Kleinpaul, K. & Dobberstein, J. [Edited by.] (1948.) Fröhner's Lehrbuch der gerichtlichen Tierheilkunde. [**Fröhner's**

textbook of German law concerning veterinary practice, sale and warranty of livestock and cruelty to animals.] pp. xi+356. Berlin: Richard Schoetz. 9th Edit. 590

The stock of this new and revised edition was destroyed in 1945 and the edition was eventually reprinted in 1948. The text had been revised and brought up to date both on the legal and on the scientific aspects. Some three quarters of the book is devoted to discussions of diseases and conditions (including the faults and defects recognized in Britain) which are of importance in connexion with the sale of horses, cattle, sheep, pigs, dogs, domestic birds and game (deer, wild pig, hares etc.). Much useful information on differential diagnosis and the determination of the age of lesions is contained in this section.

There are short chapters on the law in relation to the sale and purchase of animals and also the legislation introduced in 1933 and 1934 which dealt with cruelty to animals and animal experimentation. The docking of horses is forbidden and docked horses may not be imported without the special permission of the Minister of the Interior. The castration of horses, cattle over nine months old, pigs over six months and sexually mature sheep and goats is classified as a painful operation and may be carried out only under narcosis. For the purposes of the Ordinance narcosis may be administered only by qualified veterinarians.

There are short chapters on the legal liability of the veterinarian, the farrier and the animal owner, deceptive practices and falsification and the forensic determination of species and sex.

There is a subject index and there are numerous references to the literature scattered throughout the book. The paper is unglazed and the book has a paper cover.—E. G. White.

Hankin, T. H. (1951.) **Quarantine.**—*Aust. vet. J.* **27.** 112-116. Discussion pp. 116-118. 591

H. discusses the origins of "quarantine", early and current legislation in New Zealand for the control of animal diseases, and the veterinarian's powers and obligations under the New Zealand Stock Act of 1908 (which is to be redrafted and modernized), the Poultry Act and the Quarantine Regulations.—D. A. Gill.

Emmens, C. W. (1951.) **The Department of veterinary physiology, University of Sydney.**—*Aust. J. Sci.* **13.** 161-164. 592

The academic staff comprises the professor, two lecturers and three full-time research workers.

A plan of the building and descriptions of the laboratories and small animal rooms and their equipment are given.

The scope and organization of lectures and practical classes in general and mammalian physiology are outlined.

Research is largely confined to reproductive physiology, the following aspects being studied—(a) physiology and biochemistry of mammalian spermatozoa, (b) the capacity of both males and females to recover from sterility caused by the administration of oestrogens, and (c) local (intravaginal) action of oestrogens in the mouse. Unrelated research subjects are (a) blood constituents during the course of the adaptation syndrome in sheep, and (b) comparison of the blood pictures of identical and fraternal twin cattle.—A. Culey.

See also abstr. **310** (*M. tuberculosis* in milk); **334** (*S. pullorum* food poisoning); **335** (*S. muenchen* food poisoning); **431** (pasteurization of milk containing *R. burneti*).

LIVESTOCK HYGIENE

See abstr. **447-448** (dipping).

REPRODUCTION AND REPRODUCTIVE DISORDERS

Bonadonna, T. (1948.) Considerazioni critiche sulla tecnica per l'inoculazione del materiale spermatico nelle bovine. [**Critical remarks on the technique of artificial insemination of cattle.**]—*Zootec. Vet. Milan.* **3.** 293-301. 593

B. compared the Italian method of artificial insemination (involving the use of a speculum and Albrechtsen forceps to bring out the cervix) with the northern European or American method of locating the cervix *per rectum*, and pointed out the advantages and disadvantages of each method. In Italy, where the incidence of diseases of the genital tract is very high, examination of the mucous membrane and uterine discharges is necessary and the method commonly used there is therefore more suitable. The use of 10 in. glass catheter changed for each insemination is recommended.—L. Badiali.

Bonadonna, T. (1950.) Fertilità ottenuta con la fecondazione artificiale nella zona irrigua

padana. **[Results of artificial insemination of cows in the irrigated zone of Lombardy.]**—*Schweiz. Arch. Tierheilk.* **92.** 553-565. [In Italian: English, French and German summaries.] 594

In 1948-49 artificial insemination of 4,780 cows on 141 farms resulted in pregnancy in 74–51% of the cases, including 501 with diseases or lesions of the genital system. Success varied widely, from less than 30% on 14 of the farms to 90–100% on four others, and was correlated with conditions of feeding and hygiene, generally unsatisfactory in this area.

—E. Pantelouris.

Anon. (1949.) Noticia sôbre a inseminação artificial no Brasil. **[Artificial insemination in Brazil; sheep, cattle and horses.]**—*Circ. Minist. Agric., Rio de Janeiro.* No. 2. pp. 24. 595

This circular, written in order to acquaint the farmer with the progress of artificial insemination in Brazil, points out the advantages and possibilities of the technique and gives the addresses of the various A.I. centres throughout the country.—I. W. Jennings.

Corrias, A. (1951.) Valutazione della capacità fecondativa dei tori mediante la prova della riduttasi sul materiale spermatico. **[Judging the fertility of a bull by the reductase test of semen.]**—*Zootec. Vet., Milan.* **6.** 48-58. [English summary.] 596

Exhaustive tests have confirmed a direct relationship between fertility and duration of reduction time.—G. G. Evans.

Almquist, J. O. (1951.) **The fertility of bovine semen in diluters containing varying amounts of egg yolk.**—*J. Dairy Sci.* **34.** 763-766. [Author's summary copied *verbatim.*] 597

Using the split-sample technique, comparisons were made between standard yolk-citrate diluter containing 50% egg yolk (1:1, yolk to buffer) and diluters containing 25, 16·7 and 12·5% egg yolk (1:3, 1:5 and 1:7, yolk to buffer). No significant differences in fertility were obtained in a field trial involving 8,222 first-service cows. Under present field conditions in which most semen is used for insemination purposes within three days, these data indicate that fertility results practically as good as those obtained with 50% egg yolk can be expected with concentrations of egg yolk as low as 12·5%.

Easterbrooks, H. L., Heller, P., Lieberman, M., Plastridge, W. N. & Jungherr, E. L. (1951.) **Fertility and bacterial content of diluted bull semen treated with various concentrations of dihydrostreptomycin sulfate.**—*Amer. J. vet. Res.* **12.** 191-193. [Authors' summary modified.] 598

Percentages of non-returns to first artificial service were 61·4, 69·2, 76·5 and 72·0 for diluted bull semen containing 0, 100, 300, and 900 μg., respectively, of dihydrostreptomycin sulphate. Analysis of variance revealed a highly significant difference between levels of streptomycin. Bacterial control increased with the concentration of streptomycin, but fertility was highest at the 300 μg. level of treatment. No correlation between fertility and any specific type of organism isolated was observed.

Kvasnickii, A. V. (1951.) **[Inter-breed transplantation of ova.]**—*Sovetsk. Zooteh.* **1.** 36-42. [Abst. in *Anim. Breed. Abstr.* **19.** 224. (1951), copied *verbatim.* Signed: G.R.R.] 599

An unsuccessful attempt was made to interchange two ova in the left oviducts of a Mirgorod and a Large White sow, both of which came on heat at the same time and were served by boars of their own breed 42 hours before operation; the transfer was accomplished by a syringe (with blood serum from the sow concerned) inserted into an incision in the upper third of the oviduct. Although the ova were at the 3–5 blastomere stage when transferred, and appeared normal, none developed. A second unsuccessful attempt was made to transfer ova from a Mirgorod, which was served before slaughter, to a Large White which was not served but which came on heat at the same time as the Mirgorod; the same method was used to transplant the ova to the recipient. A three-year Mirgorod coming on heat at the same time as a 12-month Large White, was served by a Mirgorod boar and slaughtered 36 hours later. Nine fertilised ova were transferred to the left ovary of the unserved Large White through the cervix, thus avoiding post-operational shock caused by an incision in the oviduct. The Large White farrowed 115 days after the ova were transferred, producing 4 live Mirgorod piglings (2 males and 2 females). Development of the piglings was normal for 4–5 days, after which the Large White ceased lactating. Although growth was retarded until after weaning, live weight was normal at 5 months. Live weights and measurements are tabulated.

Vandemark, N. L. & Moeller, A. N. (1951.) **Speed of spermatozoan transport in reproductive tract of estrous cow.**—*Amer. J. Physiol.* **165.** 674-679. [Authors' summary copied *verbatim.*] 600

Attempts to determine the speed of spermatozoan transport in the reproductive tract of 18 oestrous cows following artificial insemination and natural breeding have been made by clamping the reproductive tract into isolated segments to stop spermatozoan migration at various intervals before and after slaughter. The time interval obtained between the artificial insemination of motile spermatozoa into the cervix and the clamping of the reproductive tract ranged from 140 down to 2·5 minutes. In every instance where motile spermatozoa were used they were found in the ovarian portion of the oviducts and in all other isolated segments of the tract. Similar rapid transport of spermatozoa to the oviducts was found after natural breeding. Non-motile spermatozoa inseminated into the cervix were transported to the ovarian portion of the oviducts in 4·3 minutes or less. The distances through which spermatozoa are transported *in vivo* in a matter of minutes is much greater than is indicated as possible from their own motility *in vitro*.

WAKELY, W. J. & KOSIN, I. L. (1951.) **A study of the morphology of the turkey spermatozoa —with special reference to the seasonal prevalence of abnormal types.**—*Amer. J. vet. Res.* **12.** 240-245. [Authors' summary modified.] **601**

The turkey spermatozoon is morphologically similar to other avian types studied. Evidence was presented for the existence of an axial filament in the body of the spermatozoon. A number of abnormal types of turkey spermatozoa were identified. These include: of the acrosome—hooked, swollen or absent; of the head—"vacuolated", double headed, giant; of the body—filiform, bent, "amorphous", bare axial filament; and of the tail—beaded, coiled, abaxial or absent.

CHENG, P. & CASIDA, L. E. (1948.) **Fertility in rabbit as affected by the dilution of semen and the number of spermatozoa.**—*Proc. Soc. exp. Biol., N.Y.* **69.** 36-39. **602**

Spermatozoa counts were made on pooled semen from two or three male rabbits and then the semen was diluted with Krebs solution to a known concentration of spermatozoa. Nine groups of four female rabbits were mated with vasectomized bucks to cause ovulation and two animals in each group were inseminated vaginally with 0·2 ml. of diluted semen and the remaining two were inseminated by direct injection into each horn of the uterus of 0·1 ml. of diluted semen following laparotomy under light anaesthesia. Fertility was determined by microscopic examination of ova flushed out of the oviducts at autopsy 25–30 hours after insemination.

Fertilization occurred in the group with as few as 16,000 spermatozoa per insemination and maximum fertility occurred with 90,000 spermatozoa. There was no significant difference between the two methods of insemination.

To determine whether different results obtained by other workers were due to use of different diluents, 12 semen samples were diluted with 0·9% NaCl and also with Krebs solution to eight successive dilutions and percentage motility determined after 30 min. in the water bath. At all dilutions Krebs solution gave a higher motility.

To determine the effect of rate of dilution 20,000 spermatozoa were diluted in four different quantities of Krebs solution and after motility determination four groups of females were inseminated by the vaginal route.

The motility of the spermatozoa had a greater effect on fertility than had the rate of dilution.—E. J. H. FORD.

REINHART, H. L., CAPLAN, I. J. & SHINOWARA, G. Y. (1951.) **Factors influencing the male frog test for pregnancy.**—*Amer. J. clin. Path.* **21.** 624-634. [Authors' summary copied *verbatim*.] **603**

A study of the male frog test for pregnancy included 1191 examinations on 840 urine specimens, using a "cold acetone concentration technic". Only 3 false negative tests were found among a total of 346 specimens of urine from known pregnant women, and no false positives among 125 specimens from non-pregnant women. These results indicate an accuracy of 99%.

BARKER, W. L. (1951.) **A cytochemical study of lipids in sows' ovaries during the estrous cycle.**—*Endocrinol.* **48.** 772-785. [Author's summary and conclusions copied *verbatim*.] **604**

A group of cytochemical tests (sudanophilia, reactivity with carbonyl reagents, birefringence, fluorescence, and acetone solubility) believed to characterize steroid-secreting glands has been applied to sows' ovaries, examined at all stages of the estrous cycle. Lipid droplets reacting positively with the entire group of tests occur in the cells of the theca interna of the follicles and in the theca lutein cells. Similar droplets, lacking only in fluorescence, occur in the granulosa lutein cells. For reasons given, it is concluded that all of these cells represent sites of production of ovarian steroid hormones. The methods employed do not permit identifica-

tion of the individual steroid hormones. The cells are largest, but their droplets smallest, in the thecal cells of follicles just prior to ovulation, and in the lutein cells during most of dioestrus (4 to 14 days after ovulation). Cells of this type are interpreted as being in the active secretory phase. Lipid droplets occurring in retrogressing corpora lutea, in the theca interna of atretic and cystic follicles and in the interstitial tissue become insoluble in acetone although they continue to respond to all of the other tests employed. These droplets may possibly represent condensation products of steroids.

ROLLINSON, D. H. L. (1948.) **A note on the incidence of *Pseudomonas pyocyanea* in the semen and sheath washings of infertile bulls.** —*Vet. J.* **104.** 108-111. 605

Of 34 infertile bulls examined, 14 had infection with *Ps. pyocyanea,* the infection being present in both the prepuce and semen in 11 cases, in the prepuce only in two cases and in the semen only in one case. The bulls had different types of infertility.

One sterile two-year-old bull with testicular hypoplasia was examined P.M. and *Pseudomonas* was recovered from all parts cultured between the sigmoid flexure of the urethra and the head of the epididymis, the greatest infection being demonstrated in the seminal vesicles. The organism was not recovered from the prepuce. The bull was in excellent condition and the carcass had no abnormalities other than enlargement of the head of the epididymis and hypoplasia of the testes. R. considers that invasion probably occurs before any suspicion of infertility is present and that, once established, it is unlikely that infection can be overcome.

—L. G. DONALD.

MALETTO, F. (1951.) Su alcuni fattori secondari (?) che influenzano la fecondabilita' delle bovine. **[Secondary factors influencing the fertility of cows.** (5 Figs. & 3 Tables)]— *Zootec. Vet., Milan.* **6.** 189-198. [English summary.] [Abst. from English summary.] 606

The author gave data for each month of the year concerning the fertility of cows in certain districts in Italy covered by the artificial insemination centre at Alfiano Natta. He considered that nutritional factors were mainly responsible for variations in fertility.

GIROUD, A., GIROUD, P., MARTINET, M. & VARGUES, R. (1950.) Gravité d'une maladie inapparente de la mère pour le foetus. **[Harmful effect of an inapparent disease of the mother on the foetus.**—*Bull. Acad. méd. Paris.* 134. 698-701. Discussion pp. 701-702. 607

The object of the experiment was to determine the effect on the foetus of an inapparent infection of the mother; the infection chosen was *Rickettsia prowazeki* in the rat, which merely causes the production of antibodies, with the presence of some rickettsia in peritoneal smears. In 88 female rats inoculated at periods varying from the 6th to the 11th days of gestation with 1–2·5 mg. of lung tissue taken from mice five days after intranasal inoculation of *R. prowazeki,* no significant temperature changes were recorded, and they were killed and autopsied on the 21st day, one day before term.

In 40·9% of the rats no foetuses were present; the average number of foetuses carried was 3·9, as compared with 9 in controls, and their average weight was 2·09 g., compared with 4·5 g. In the uterus there were remnants of implantation sites, indicating death and resorption of foetuses. The most marked effect followed the injection of material in the ninth day of gestation.

No anatomical abnormalities were found in the foetuses, apart from one cleft palate. Rickettsial antibodies could not be demonstrated in g. pigs inoculated with suspensions of embryos.—E. COTCHIN.

LOGAN, W. P. D. (1951.) **Incidence of congenital malformations and their relation to virus infections during pregnancy.**—*Brit. med. J.* Sept. 15th. 641-645. [Author's summary slightly modified.] 608

The incidence of congenital malformations [in human beings] is discussed utilizing evidence from mortality and stillbirth statistics and from special studies reported in the literature.

The published results of various prospective inquiries into the influence of virus infections during pregnancy in causing congenital malformations are reviewed, and desiderata of a successful inquiry are suggested.

PHILLIPS, R. (1950.) **The seasonality of calf births in England and Wales.**—*Brit. vet. J.* **106.** 18-29. 609

Analysis of official monthly records of calf births for the years 1945, 1946 and 1947 revealed two fairly constant low levels in June–July and Dec.–Jan., and two variable peaks in March and Oct. In England the autumn is higher than the spring peak and has increased by about 1% *per annum* over the period. In Wales the spring peak is higher than the autumn at the beginning of the period but the autumn

peak has increased by 2% *per annum* during the period. The three year county averages for both countries have been broken down into seven groups from Group I with 45% autumn calvings to Group VII with 15–20% of the year's total occurring in the autumn months. Generally the dairying counties are in Groups I and II and rearing counties in Groups III-VII. The possible causes of the differences between the groups are discussed and P. suggests that the effect is due to varying climatic conditions rather than different methods of husbandry. Differing climates may produce variations in amounts of oestrogens in the grasses and consequently variations in quality of foodstuffs conserved for winter use.—E. J. H. Ford.

See also abstr. 500 (vitamin E and reproduction); 612 (birth weight of calves).

ZOOTECHNY

Howe, J. W. (1949.) **The effects of varying amounts of zebu blood on the adaptability of dairy cattle to conditions in Jamaica.**—*Trop. Agriculture, Trin.* **26.** 33-42. 610

Jamaican conditions are generally characterized by high temperatures and high rainfall, though the latter varies considerably according to district. The effect of these conditions on Northern breeds of cattle crossed with varying amounts of Sahiwal zebu blood was studied from the records of the Government Stock Farm, Hope, Jamaica, over the period 1910-1940. Details of zebu crosses with Jerseys, Guernseys and Holsteins were available. The animals were divided into five groups according to the proportion of Northern blood which varied from 8/8 in Group I to 4/8 in Group V.

The growth rate, milk production per lactation, maximum daily production and butterfat percentage all increased significantly as the zebu blood increased. The number of services per calf decreased slightly and the age at first calving increased as zebu blood increased, but only significantly so in Jerseys. The lengths of dry period and of service period increased, but not significantly so. The length of gestation increased significantly in the Jersey breed only. The sex ratio of calves did not alter significantly.—E. J. H. Ford.

Ittner, N. R., Kelly, C. F. & Guilbert, H. R. (1951.) **Water consumption of Hereford and Brahman cattle and the effect of cooled drinking water in a hot climate.**—*J. Anim. Sci.* **10.** 742-751. [Authors' summary slightly modified.] 611

An investigation was made during the summer in California on the effects of cooling drinking water and on the comparative water consumption of zebu and Hereford cattle.

The mean air temperature during the test was 85·4°F; mean maximum, 100·5°F; mean minimum 70·2. The extreme range was from 54° to 118°F.

The gains for Herefords, Lot 1, (drinking water 65°F), Herefords, Lot 2 (drinking water 88·2°F) and for zebu, Lot 3 (drinking water 88·2°F) were 1·46, 1·07, and 1·45 lb. per day respectively. The ration was 75% alfalfa and 25% barley hay.

Daily water consumption per head averaged 15·36, 16·61, and 9·98 gal. respectively for Lots 1, 2, and 3, corresponding with 1·69, 1·89, and 1·55 gal. per 100 lb. live weight.

Data on respiration rates and on drinking habits are included. The cooled water effected an average decrease in heat load of 2,800 B.Th.U. per animal daily. The physiological and practical significance of the data are discussed.

Lazarus, A. J. & Rangaswamy, M. C. (1950.) **A study of the birth weight of calves of Indian breeds.**—*Indian J. Dairy Sci.* **3.** 46-51. [Authors' summary slightly modified.] 612

The birth weight of calves of the Gir, Hariana, Sindhi and Tharparkar breeds of cattle and of Murrah buffaloes was studied. In the case of cattle, the average weight at birth of male calves was 52·1 lb. and of female calves 48·5 lb. In the case of buffaloes their weights were 81·4 and 70·2 lb. respectively. Male calves were as a rule heavier than female calves. The birth weight of calves varied with the breed of the animal. The increase in weight of the dam during pregnancy was not related to the weight of its calf at birth. The ratio of the weight of the dam after calving to the weight of the calf varied between 14·8 to 19·2 in all the animals studied.

Meyer, W. D. (1951.) **The Dorper: its characteristics and value.**—*Fmg. S. Afr.* **26.** 289-290. 613

The "Dorper" is a breed of sheep which has been in process of development during the past 12 years. The foundation was a cross between the Dorset Horn and the Blackheaded Persian; since then by selection a useful mutton type has been fixed. The accumulation of fat on the rump, a characteristic of the Blackheaded Persian progenitor, has been eliminated and the rate of growth and body weight are satis-

factory, the lamb being fit for slaughter at a live weight of 70 lb. at the age of from 4½–6 months. The ewes are good milk producers and fertility is high even under drought conditions. The fleece is worthless for wool, being a mixture of hair and wool. It is claimed to be a very suitable breed for arid districts with a rainfall of 10 in. or less *per annum*.—M.C.

MAXWELL, M. E. (1950.) **Fellmongering investigations. XVI. A survey of the bacterial flora of sheepskins.**—*Aust. J. appl. Sci.* **1.** 497-513. [Abst. from author's summary.] **614**

The predominant bacterium on the wool roots from all skins from the U.S.A. and Canada at the termination of the "sweating" process is a species of *Pseudomonas*. These skin samples all require 3–8 days at 25°C. for complete loosening of the wool. The two samples of dry skin from Britain show the same predominant flora as the Australian skins at the termination of "sweating", namely, a strain of *Proteus vulgaris* and a species of *Achromobacter*.

WHITLOCK, H. V. (1951.) **An oesophageal tube for drenching sheep with phenothiazine.**—*Aust. vet. J.* **27.** 206-207. [Author's summary copied *verbatim*.] **615**

An oesophageal tube for drenching sheep with phenothiazine is described and illustrated. It is adaptable to most of the existing automatic drenching guns. Tests have proved the advantages of using this tube for the administration of phenothiazine suspensions to sheep. These advantages, particularly the avoidance of phenothiazine staining, are enumerated.

AHUJA, M. L. & SINGH, G. (1950.) **A brief note on mouse breeding.**—*Indian J. med. Res.* **38.** 315-316. **616**

With the monogamous system of mouse breeding, instead of four to five litters, a female can produce six to ten litters of 2–10 mice each during one year.—D. D. NAGPAL.

ANON. (1950.) **Notes on the law relating to experiments on animals in Great Britain. (The Act of 1876).** pp. 13. London: The Research Defence Society. 1s. [Free to members.] **617**

These notes on the Cruelty to Animals Act (1876) have been prepared to elucidate a number of points for licence holders. The conditions under which licences are granted and which of these conditions the licensee is freed from on the granting of a certificate are explained. Delegation of authority under licences and certificates is also explained.

The way in which applications should be made is set out.—W. S. MARSHALL.

TECHNIQUE AND APPARATUS

BOLKHOVITINOV, D. Z. (1950.) **[A method of identifying helminth eggs.]**—*Veterinariya, Moscow.* **27.** No. 4. 47-49. **618**

Utilization of the variation of the specific gravity of sodium chloride in solution according to the concentration of the solution to separate helminth eggs from faeces.—F.A.A.

JONES, R. McC. [Professor of Biology, Winthrop College, South Carolina.] [Edited by.] (1950.) **McClung's handbook of microscopical technique for workers in animal and plant tissues.** pp. xix + 790. New York: Paul B. Hoeber, Inc.; London: Cassell & Co. Ltd. 3rd Edit. revised & enlarged. 90s. **619**

As the title indicates, the scope of this book is wide. Part I describes general techniques for conducting tissues through all the successive stages to that of the finished, stained section. In Part II special procedures with limited application are discussed: methods of cytology, embryology, histology—subdivided into basic tissues: blood, bone and cartilage, teeth, nerve tissues etc.—and protozoology. Part III comprises special procedures with general application: methods for studying fresh materials, *e.g.* micrurgy, micro-injection, vital and supravital staining and the centrifuge microscope; methods for studying fixed and fresh materials: polarizing, fluorescence and phase contrast microscopy; and methods for fixed materials: radio-autography, electron microscopy and microincineration. The book is not specifically for the histologist or pathologist, medical or veterinary, but for the zoomicroscopist generally.

Those familiar with the first edition will have realised from the foregoing that several new chapters have been added. To make way for these, the sections of bacteriological and botanical procedures have been deliberately, though regretfully, omitted. Much of the remainder has been revised or rewritten, but much of the sections on blood, despite brief additions, is out of date.

There are two ways of preparing a book on so vast a subject: one or two authors may write at first hand of what lies within their own experience, quoting the literature for the rest; or a team of experts may each contribute on his own speciality. This book sometimes falls between the two systems, for although each section is contributed by an expert on that subject, the

reader is sometimes aware that a method described is being quoted without trial—a point of some importance with regard to staining techniques, where "wrinkles" are often an important part of method. The Editor, casting her net wide, has gathered in an extensive compendium. This book is well bound and well printed.

—L. M. MARKSON.

PATZELT, V. & RAAZ, F. (1950.) Das Mikroskop und seine Nebenapparate im Dienst der Naturwissenschaften, Medizin und Technik. [**The microscope and its accessories.**] pp. 155. Vienna: Georg Fromme & Co. Sch. 3.50 & Sch. 4.-. 620

The microscope has now reached such a high degree of development that most modern instruments will give an image limited only by the wavelength of the light and the resolving power of the retina. To get the full benefit of these capacities it is essential to have a thorough understanding of the basic physical principles. This book sets out to provide the necessary theoretical and practical information on microscopy for users of microscopes. Starting with the simple lens the book goes on to describe the various forms of compound microscope both monocular and binocular. Lavish use is made of diagrams and photographs to illustrate the descriptions, always from the practical rather than the theoretical aspect. As a result of long teaching experience the author knows just what explanation is needed.

The subject is discussed under the following chapter headings: illumination, objectives, oculars, photography and drawing, measurement and counting, image formation in the microscope and resolution. Special forms of microscopy, ultra-violet, fluorescence, phase contrast and dark ground are then discussed. Though less useful for biologists, the ultra microscope, the metallurgical and the reflecting microscope are also described. There is a special section on the use of polarized light and also a detailed description of the electron microscope. Finally, there is a short chapter on the care and testing of microscopes.

A most useful feature of the book is its bibliography.—GEORGE SLAVIN.

TORNABEN, J. A. & DE BEER, E. J. (1951.) **A method for the rapid preparation of histological sections.**—*Science.* **114.** 182. 621

Thin pieces of tissue were fixed in a modified Bouin's fluid, rapidly dehydrated in acetone, cleared in xylene, saturated with paraffin wax in a vacuum oven and embedded. Dehydration and clearing were carried out in Allihn sintered glass filter tubes—an essential part of the technique. The authors have used this method for over a year and claim good results.

—L. M. MARKSON.

ARNOLD, J. S. (1951.) **A method for embedding undecalcified bone for histologic sectioning, and its application to radioautography.**—*Science.* **114.** 178-180. 622

Finding that celloidin lacked the adhesive and cohesive properties necessary to support individual particles of brittle bone firmly in the section, and that it failed to impregnate the interior of dense cortical bone, the author sought to improve this embedding medium. Of the various plasticizers tested he found diamyl phthalate the most satisfactory. Penetration of the medium was increased by using acetone as the solvent and embedding under partial vacuum, then raising the pressure to three atmospheres and the temperature to 60°C.

Sections are cut with a heavy sledge microtome and specially hardened blades. For purely histological purposes, sections are prepared in the usual way and treated as celloidin sections. When radioautographs are to be made, sections are mounted on nuclear track emulsion covered slides prior to subsequent treatment.

—L. M. MARKSON.

FINK, R. M. (1951.) **A new approach to high resolution radioautography.**—*Science.* **114.** 143-149. 623

A discussion of the problems of radioautography. F. described a new approach. The tissue to be examined was rolled out in a mill between two pieces of lead, the upper being a sheet of foil 0·1 mm. thick. After mechanically enlarging the tissue about 20 times, a sheet of fine grain X-ray film was fixed to the specimen over the foil and left in close apposition for two weeks. The image on the negative can be further enlarged.—L. M. MARKSON.

LANCASTER, H. O. (1950.) **Statistical control in haematology.**—*J. Hyg., Camb.* **48.** 402-417. [Author's summary copied *verbatim.*] 624

The value of 'statistical control' in haematology has been demonstrated. After a short historical survey of the chief contributions to the theory of the technique of counting and of the application of the Poisson distribution in biology, the statistical theory of the distribution of cells in the haemocytometer is briefly described and examples are given of large sample methods of testing goodness of fit. Some of the author's counts are considered.

In the red cell counts a 'crowding' effect is noted by which the variance between the counts on the individual squares on the haemocytometer is reduced. This effect is trivial in white cell counting owing to the small proportion of the area occupied, but is important in reducing the variance between the numbers of red cells on individual small haemocytometer squares. A quadratic function adequately describes the regression of the variance on the mean for fixed size of haemocytometer square, for the usual range of red cell density. This function, calculated on the basis of the author's own counts also describes Berkson's findings on crowding adequately and is not, considering the approximations involved, inconsistent with the theoretical discussion on crowding. Reasons are given for believing that the crowding effect is only trivial if blocks of 16 squares are compared in red cell counting.

The methods of statistical control, suggested by R. A. Fisher's work, are introduced. It is shown that they give satisfactory results when applied to some of the author's own counts. The methods are used to discuss the consistency of the counts of certain medical graduates and technicians. The methods are suitable for a review of the literature with the object of examining the internal consistency of the counts made by various authors.

See also absts. **310** (rapid detection of *M. tuberculosis* in milk); **314** (laboratory diagnosis of TB.); **336** (ring test); **368** (culture media for *Tr. columbae* and *Tr. foetus*); **388** (examination of brain in bovine rabies); **396** (cultivation of Newcastle disease and influenza viruses); **554** (direct blood transfusion); **593** (artificial insemination); **603** (pregnancy diagnosis); **615** (phenothiazine administration to sheep); **627** (collection of blood).

MISCELLANEOUS

Sachs, A. (1951.) **The storage and stability of biological products.**—*Mon. Bull. Minist. Hlth publ. Hlth Lab. Serv.* **10.** pp. 170-177. **625**

The potency of vaccines and sera depends on the conditions of their storage and on the time that has elapsed since their manufacture. Brigadier A. Sachs, Director of Pathology and Consulting Pathologist to the U.S. Army, has drawn up instructions with the object of reducing wastage due to faulty storage by (a) distributing depots, (b) user units with refrigeration, and (c) user units without refrigeration. Care in the transport, collection, and distribution of vaccines and sera is particularly important in warm climates. A useful table is appended giving the life of such products, correlated with the conditions of storage. A second table gives the rate of deterioration of enzyme-refined and concentrated sera stored at different temperatures.—W. R. Bett.

Romeyer, P. (1950.) Modifications apportées à la méthode de diagnostic du lait de vache dans le lait de femme. [**Modification in the method of detection of cows' milk in human milk.**]—*Lait.* **30.** 249-252. **626**

The test depends upon the ammonium molybdate precipitation of phosphate present in the filtrate of a sample of milk after removal of the precipitated proteins. The phosphomolybdate compound is then reduced with stannous chloride solution; a blue colouration is obtained the intensity of which depends upon the amount of phosphate present.

The colour is directly compared with a series of test tubes in which the amount of cows' milk added to the human milk is known. The method detects up to 5% of cows' milk in the sample; it is quickly carried out (15 min.) and does not require special equipment or skill.

—E. Vazquez-Lopez.

Sergent, G. (1949.) Trocart à saignée et pots pour la récolte individuelle du sang alimentaire contrôlé. [**A bleeding cannula and containers for the collection of blood for culinary purposes.**]—*Rec. Méd. vét.* **125.** 703-705. **627**

A trocar and cannula with offset delivery arm is described, a large size for horses and cattle and a smaller one for pigs.—J. T. Done.

Glorieux, H. (1950.) Lésions thermiques et mecorniques de la bombe atomique. [**Lesions caused by the atomic bomb.**]—*Pr. méd.* **58.** 902-904. **628**

A brief illustrated account is given of the types of lesion produced at Hiroshima and Nagasaki. About 15% of the hospitalized cases were suffering from secondary lesions resulting from radio-activity, while about 80% of the wounded were affected with burns or traumatic injuries. The last-named included both blast-injuries and crush injuries. Of those with burns the death rate after one week in hospital was 53% and after two weeks it had risen to 75%.

—A. N. Worden.

REPORTS

NYASALAND PROTECTORATE. (1950.) **Annual Report of the Department of Veterinary Services for the year ended 31st December, 1949.** [STUCHBERY, H. M.] pp. 14. Zomba, Nyasaland: Govt. Printer. [fcp.] 629

The disease position in Nyasaland remained satisfactory during the year. RINDERPEST did not cross the Tanganyika border from the north, though some anxiety was felt because of control difficulties in Tanganyika, following failures of KAG vaccine. TRYPANOSOMIASIS was reduced, following recession of tsetse fly in some areas. EAST COAST FEVER was almost negligible in the dipped areas of the Northern and Southern Provinces, but it is suspected that in the undipped Central Province heavy losses did occur. Application was made for a grant from the Colonial Development and Welfare Fund to link up the dipping areas in the north and south of the Protectorate at present separated by an endemic EAST COAST FEVER.

A livestock census was made during the year and affords an interesting comparison with figures for the previous year. However, a survey of stock diseases has only just been started with the assistance of Development and Welfare Funds. The development of the cattle industry is in an early stage. Subsidiary industries, hides and skins, ghee and butter, are in very early stages of development. Some progress is reported in the post-war development programme, but has been slower than hoped because of staff shortages. Abnormally dry weather led to difficulties over fodder on the department's stock farms and to the curtailment of activities such as the Tanning and Cobbling courses in the Central Province.

—R. N. FIENNES.

U.S.A. MICHIGAN. (1950.) **Report of the School of Veterinary Medicine, Michigan State College, East Lansing, 1950.** [BRYAN, C. S.] pp. 77. 630

Satisfactory progress has been made in the scheme for control of BRUCELLOSIS, and brucella M vaccine is being more widely used. MASTITIS is still a serious problem.

A complete pathological examination of eight cattle which had died of X DISEASE was made. The main symptoms are lachrymation, excessive salivation, and thickening and wrinkling of the skin due to hyperkeratosis. Extensive changes were noted in almost every organ of the body, but the aetiology of the disease remains unknown.

After ablation of the corpora lutea, 15 mg. of progesterone daily will maintain twin pregnancy in the goat, while 10 mg. are sufficient to maintain a single pregnancy.

Blood groups were demonstrated in sheep.

At least four species of coccidia occur in turkeys in the U.S.A.: *Eimeria dispersa* (originally described in the bob-white quail) in the duodenum, *E. meleagrimitis* in the small intestine, *E. meleagridis* in the caeca, and *E. gallopavonis* (described as a new species) in the ileum and rectum. *E. meleagrimitis* is the most harmful species.

Avian virus respiratory diseases, especially INFECTIOUS BRONCHITIS and NEWCASTLE DISEASE, were studied. In poultry, the main emphasis has been on an investigation into AVIAN TB.

ANAPLASMOSIS was diagnosed for the first time in Michigan.—G. B. S. HEATH.

BOOK REVIEWS

KAUFFMANN, F. [M.D., Chief, International Salmonella and Escherichia Centre, Statens Seruminstitut, Copenhagen.] (1951.) **Enterobacteriaceae. Collected studies on Salmonella, Arizona, Ballerup-Bethesda, Escherichia, Alkalescens-Dispar, Klebsiella, Shigella, Providence and Proteus.** pp. 338. Copenhagen: Ejnar Munksgaard. 54s. or $7.50. [In English.] 631

The nomenclature and classification of this book is based on the Report of the Enterobacteriaceae Sub-Committee of the International Association of Microbiologists, 1950.

The largest section of the book is devoted to the *Salmonella* group and contains detailed information on the biochemical reactions and antigenic structure of this group. In addition, the section includes methods of preparing antigens and of carrying out serological techniques for the identification of salmonella. Of particular interest to veterinary bacteriologists are the author's suggestions for the stocks of diagnostic sera required for the identification of the more common salmonella species associated with animal disease.

Paracolon bacteria are divided into the Arizona, Ballerup and Bethesda groups and are described under these separate headings. The Escherichia group (*coli* group) is discussed from the medical aspect and no reference is made to

animal diseases associated with these organisms. *Shigella alkalescens* and *Sh. dispar* are considered together as a subdivision of the Escherichia group. Under the heading of Klebsiella group the author has included the Friedländer, Aerogenes and Aerobacter groups.

The classification and nomenclature of the Shigella group is based on the Report of the Shigella Commission of the International Enterobacteriaceae Sub-Committee, 1950. The author has included a new group of Enterobacteriaceae, designated the Providence group. The biochemical reactions of these organisms are closely related to *Proteus morganii* and *Proteus rettgeri*. The two final chapters give details on the antigenic relationships between the different groups of Enterobacteriaceae and on suitable media for growing these organisms.

Both veterinary and medical bacteriologists concerned with the isolation and identification of members of the Enterobacteriaceae will find this book of great value. It is probable that certain sections, particularly those on paracolon bacteria and the Providence group, will require reviewing relatively soon. This, however, does not detract from the usefulness of the book as a whole, in classifying the relationships between different groups of Enterobacteriaceae. The book contains many references and 100 tables. It is well bound and clearly printed.

—A. Buxton.

Cameron, T. W. M. [M.A., PH.D., D.SC., M.R.C.V.S., F.R.S.C. Professor of Parasitology, McGill University.] (1951.) **The parasites of domestic animals.** pp. xvi + 420. London: Adam & Charles Black. 2nd Edit. Revised and enlarged. 38s. 632

This is a revised edition of Cameron's "The internal parasites of domestic animals" to which has been added a new section on the external parasites of veterinary importance. The book is divided into ten parts, the first of which is introductory and includes a chapter on the nomenclature and an interesting brief account of the history of parasitology. Part two deals with the protozoa and shows little change from the 1934 edition. A page dealing with *Trichomonas*, three extra pages on the coccidia, a few lines on *Leucocytozoon* (mis-spelt *Leucocytoon*) and about one page on geographical distribution have been added. These additions have of course altered the pagination in places, but the page numbers given in the table of contents on page ix have not been corrected. On page 45 one is told that "the relative pathogenicity of the four species (of *Theileria*) is shown on page 43". It was on page 43 in the old edition but is now on page 46. Opportunity might have been taken when reprinting to correct spelling mistakes such as "haematurea" on p. 46. There are many omissions and errors, which detract greatly from the value of this section, *e.g.* Asia is not given in the geographical distribution of *B. bigemina;* mammals are said to be insignificant in numbers within tsetse-fly belts; dimidium bromide is not mentioned in the list of drugs used for treatment of trypanosomiasis which is all the more surprising since the newer and still experimental drug antrycide is: the methods suggested on p. 30 for dealing with the problem of trypanosomiasis in livestock in Africa show a lack of contact with modern views on the subject.

There is no mention of the *Plasmodia*, the *Toxoplasma* nor of *Trypanosoma cruzi*. The statement on p. 28 that " Outside of Africa (except Central and South America) trypanosomes occur only in domestic animals" is incorrect. Trypanosomes have been recovered in Asia from rats, wild elephants, wild buffaloes, tortoises, snakes, and many wild birds; and in Europe from rats, birds, frogs, fishes, etc. *B. mutans* is included in the list of *Babesia* spp. although it is now generally recognized that the correct name is *Theileria mutans*. The description and the plate figure of *Babesia gibsoni* of the dog both omit the ring form which is the most typical form of this parasite and the one which one sees most frequently when examining blood films. The table of species of trypanosomes on pp. 31-32 is unsatisfactory. *T. cruzi* and *T. lewisi* are omitted; *T. gambiense* and *T. rhodesiense* (and "all other forms from man") are said to be synonyms for *T. brucei*. *T. evansi* is given as *T. brucei* var. *evansi* and *T. equiperdum* is treated similarly.

Modern practice is to treat *T. gambiense, T. rhodesiense, T. evansi and T. equiperdum* as distinct species. To group them all as either synonyms or varieties of *T. brucei* is confusing, especially to the student. The omission of *T. cruzi* both from the table and from the text is a serious one in a veterinary textbook since animal reservoirs including dogs and cats are of importance.

The helminths are treated in part three and this is the longest section of the book and in general deals adequately with the subject; although in some places a little more detail would have been welcome. There are occasionally statements which are open to doubt, for example on p. 101 *Nematodirus* is said to be "perhaps the commonest form in lambs in Britain". This section includes some excellent photographs and photomicrographs of para-

sites *in situ* and of the lesions they produce. Part four gives a brief account of the immunology and serology of parasitic infestations which has been slightly rearranged and revised in this new edition. It does, however, occupy the same space as before and such great strides have been made in these aspects of parasitology since 1934 that the section could have been lengthened with profit. Part five has been considerably lengthened in this new edition and constitutes a useful summary on the actions and uses of the better known anthelmintics.

Parts six and seven are entirely new sections dealing with the external parasites of the domestic animals, part six dealing with the leeches and part seven with the arthropod parasites. In part seven there are a number of errors in spelling and nomenclature which should be corrected in a future edition, for example p. 269. *Microcalliphoria* for *Microcallophora,* p. 273, *laenica* for *laernica.* There is also at least one instance where the text is misleading, for example *C. chloropyga* could presumably relate to *Calliphora, Chrysomia* or even *Cochliomyia,* there being no indication that *Chrysomia* is meant. This commendably practical section of the book includes a useful précis of the actions and uses of insecticides. Part eight is a new section which deals concisely and adequately with the principles of prevention of helminthic disease. Part nine outlines a number of laboratory techniques useful to the parasitologist and the book concludes (part ten) with host lists of the internal parasites and a short bibliography.

Better proof reading and thorough checking would have eliminated many errors which detract from the value of the book, especially of the sections on the Protozoa and Arthropoda. The section dealing with the helminths admirably meets the needs of students.

—T. E. Gibson.

Scheunert, A. & Trautmann, A. (1951.) Lehrbuch der Veterinär-Physiologie. [**Textbook of veterinary physiology.**] pp. xi + 486. Berlin: Paul Parey. 3rd revised Edit. DM. 38.60. **633**

The appearance of a textbook directly concerned with veterinary physiology is an all too rare occurrence and in producing a new edition of this work the authors have attempted to fill a long felt want. Their aim has been to present a general account of the fundamentals of mammalian physiology without over-burdening the text with controversial matter which might be confusing to students. This perhaps is to be regretted for the inevitable result is that the book has become an orthodox treatise on systematic physiology and the subject is presented in a somewhat dry and dogmatic fashion. Moreover, since few authorities are quoted and no references are given, its value to advanced students is reduced.

The strictly systematic approach leads to some difficulties in arrangement of the text. The reproductive system suffers the most since the various hormones are considered with the endocrine system and the sexual cycle is dismissed in a few pages of small type. Similarly, divorcing the description of the activities of the mammary glands and the placenta from the section on reproduction, makes it difficult to piece together the physiology of pregnancy and the events related to it. In this connexion no mention is made of the significance of the colostral globulins and the differences in the production of placental hormones by various species is not brought out.

The most satisfying sections are those dealing with the blood vascular system and respiration; the central nervous system and the special senses are also adequately treated in a straightforward manner. Admittedly it is difficult to give a concise account of the various aspects of metabolism and in this the authors have been reasonably successful, but as in so many physiological textbooks, no satisfactory picture is given of liver function as a whole. Also, one would have wished to find a better account of carbohydrate metabolism in ruminants and of the mechanisms concerned with the water-balance of the body.

The book, however, fulfils the intention of its authors in that it provides the veterinary student with a sound introduction to general physiology without laying emphasis on any one particular aspect of the subject. As is pointed out in the introduction, the book is not intended to replace lectures or other classes but to form a background upon which these may be based, so that together they may enable a student to acquire an understanding of the integration of the various physiological processes which is necessary for the life of an individual.—J. A. Nicholson.

Harris, P. L. & Kujawski, W. [Compiled by.] (1951.) **Annotated bibliography of Vitamin E. 1940 to 1950.** pp. 184. New York: The National Vitamin Foundation Incorporated. $3. **634**

This publication contains 1,562 references, nearly all of which have short abstracts, on the various aspects of vitamin E under eight headings including veterinary use in farm animals, emphasis being directed towards physiological more than chemical or medical findings. Per-

tinent scientific literature from 1940-50 has been included. There is an author index. Appreciation is due to the compilers of this bibliography on the presentation of current literature on vitamin E in a convenient form.

—E.M.J.

PINCUS, G. [Edited by.] (1951.) **Recent progress in hormone research. The proceedings of the Laurentian Hormone Conference. Vol. VI.** pp. 431. New York: Academic Press Inc. $8.50. 635

This volume records the proceedings of the conference held in Canada in September 1950. Data on recent work are presented by leading authorities. The discussions on the various papers are given. The result is a stimulating and very useful account of the progress in one of the most active fields of biological research. The book is divided into sections dealing with gonad development and function, isotopes in hormone research, hormones and metabolism, and certain aspects of problems relating to the adrenal cortex. The following remarks indicate the contents of these sections and emphasize findings of special veterinary interest.

The first paper is concerned with the embryogenesis of the adrenal and reproductive glands. Important points concerning the effects of maternal pregnancy hormones on the development of foetal sex glands are raised. Interesting views about the bovine freemartin are presented and the effect of maternal hormones on foetal ovarian development in the horse is mentioned. The second paper is based on work on experimental cryptorchidism in the rat, and on clinical evidence derived from cases of undescended testes in man. Questions relating to the damage which occurs when the testes are retained in the intra-abdominal position are discussed. The evidence produced supports the view that retention of the testes in the abdomen results in some loss of function even if descent is procured prior to puberty. Gonadotrophin administration appears to have little effect on such loss of function. In the unilateral cryptorchid, functional inferiority is not confined to the undescended testes. The thesis that oogenesis can occur in the adult ovary is examined in the next paper. Most available evidence is against the theory. Results are given indicating that hormone treatment will not stimulate neo-formation of oocytes in the adult animal.

The second section covers fields concerned with the use of isotopic biological synthesis of cholesterol and with the use of isotopic steroid hormones. Methods for calculating the daily production of testosterone in the normal animal are discussed. Techniques for experimental work with labelled steroids are described, and the importance of variations in liver detoxication mechanisms in dfferent species is stressed. Section three is devoted to a philosophical paper dealing with the extrinsic and intrinsic variables which affect the nature and extent of metabolic adjustments. Fundamental relationships between hormones and metabolic responses are discussed.

Papers dealing with the chemistry of adrenal cortical steroids, the nature of the adrenal secretory product, salt and water metabolism, stress and protein metabolism, and the physiological effects of cortisone and A.C.T.H. in man occupy the next section. An interesting account of the intense effort of steroid chemists in dealing with the intricate problems associated with corticoid hormones is given, and data derived from techniques such as adrenal perfusion are discussed. It appears that steroid hormones produced in other glands can be transformed into corticoids when circulated through adrenal tissue. Results are given indicating that, while the posterior pituitary and adrenal cortex have opposite actions on the kidney tubules so far as sodium and water excretion are concerned, their effects on potassium excretion are supplementary. The paper on stress and protein metabolism provides experimental evidence in support of the concept that the metabolic response to stress is not initiated by adrenal cortical hormones, but that it is sustained and modified by them. The last sub-section of this portion of the book is concerned with the influence of cortisone and A.C.T.H. in the metabolism of carbohydrate, protein, fat, and electrolytes in man.

Section five deals with the effects of A.C.T.H. and cortisone on neoplastic diseases in man. Marked temporary regression of lymphoid tumour masses is produced by A.C.T.H. and cortisone but complete remission does not occur. One finding of particular interest relates to the fact that in patients with chronic lymphatic leucaemia administration of testosterone abolished the catabolic effect of cortisone on normal tissues without eliminating its destructive effect on neoplastic tissue.

The precise relationship of much of the work here recorded to the problems which beset those concerned with animal health and diseases must await further elucidation but, in many cases, the implications are obvious. A vast field is opening up, and there are many indications for veterinary work based on fundamental physiology and endocrinology. Research workers investigating relevant problems will

need no recommendation to consult this book. Practitioners and others concerned with animal health problems will find in it a plethora of stimulating material on which may well be based considerable advances in our knowledge of many important and troublesome diseases.

The book is well produced and printed on good paper, references are given after each paper, and useful author and subject indexes are provided at the end of the book.

—J. LOCHIEL MCGIRR.

MASON, I. L. (1951.) **The classification of West African livestock.**—*Tech Comm.,Com. Bur. Anim. Breed. Genet.* [Edinb.] No. 7. pp. vii + 39. Farnham Royal, Slough. Commonwealth Agricultural Bureaux. 10s. 6d. **636**

This helpful little book has been compiled not only from published information but by consultation of veterinarians both British and French such as W. G. Beaton, J. L. Stewart, S. Simpson, P. Mornet and Doutressoulle who had had long experience in West Africa, and agriculturists such as R. R. Glanville, G. M. Gates and S. D. Ross. It deals with the cattle, horse, sheep and goat breeds and provides a basis for their classification. It is well illustrated with 38 photographs and has two maps showing the distribution of cattle and horse breeds.

—M.C.

DE BEAUFORT, L. F. [Formerly Director of the Zoological Museum and Prof. of Zoogeography, Amsterdam.] (1951.) **Zoogeography of the land and inland waters.** pp. viii + 208. London: Sidgwick & Jackson, Ltd. 30s. **637**

In his preface the author points out that the zoogeography—and how right and proper that he emphasizes that this word "is pronounced Zoögeography, like Zoölogy, not Zoo.ology as is so often heard"—of this book is principally historical zoogeography, as factors influencing present land and freshwater distribution have mostly been effective in the past. The many hypotheses put forward by some zoogeographers and phylogenists led Darwin in 1856 to protest about those who make continents "as easily as a cook does pancakes". Palaeontology is undoubtedly the surest guide although palaeontological evidence is perforce fragmentary, but it will become less so as new fossil forms are discovered. Zoogeography, in the regional sense, is not the final aim but, to quote the author, "is only a descriptive branch of science which provides us with the means to study the distribution of animals as a true causal science".

The divisions used in this book are a modification of Sclater's classification which still forms the basis of the classification of zoogeographical regions. Three main divisions are used: (1) The Arctogaea consisting of three regions, the holarctic with palaearctic and nearctic sub-regions, the Ethiopian with Africa and Madagascar sub-regions and the Oriental and India; (2) the Notogaea with Australia, New Zealand and Oceanic Islands region and (3) the Neogaea with its neotropical regions. The regions can only be rigidly defined where oceans form distinct barriers; in other cases the limits are less rigid and can rarely be distinguished by single lines on a map. The different means of dispersal of different groups of animals are a further complication to clear-cut classifications. A consideration of Arctogaea occupies chapters 2–6, Neogaea chapter 7 and Notogaea chapter 8. The final chapter is devoted to the islands between the Asiatic and the Australian continental shelves, *i.e.*, the Celebes, the Moluccas and the Lesser Sunda Islands. The fauna of these parts is of extreme interest, being partly Oriental and partly Australian, and it was in this Archipelago that Alfred Russell Wallace formed his theories on the correlation of evolution and geographical distribution. The key to the history of this curious mixture of faunal origins lies in the Celebes and the contents of this chapter are of considerable significance.

The book is enhanced by a comprehensive bibliography and the whole forms an authoritative presentation of the subject for the student of biology. The great mass of information contained in its 184 pages of text may deprive it of a wider reading public.—C. HORTON SMITH.

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